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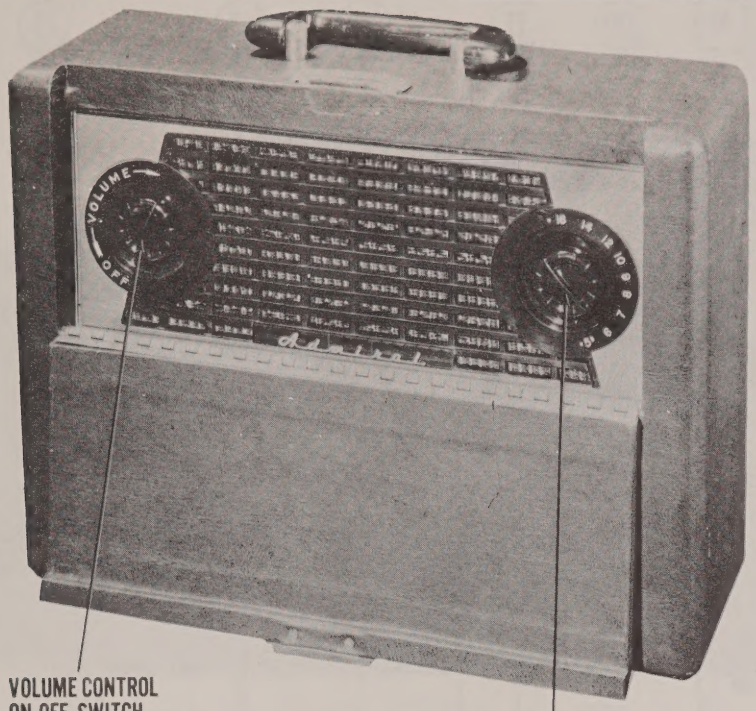

ADMIRAL CHASSIS 6Y1
(BATTERY-LINE OPERATED)

ADMIRAL CHASSIS 6Y1
(BATTERY-LINE OPERATED)

ADMIRAL MODEL 6Y18

TRADE NAME Admiral, Model 6Y18, 6Y19 (Ch. 6Y1)
MANUFACTURER Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE) Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output

POWER SUPPLY RATING. 110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .16 Amp. @ 117 Volts AC or 55MA @ 9 Volts DC and 15MA @ 90 Volts DC
TUNING RANGE—BROADCAST 540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 of 1R5 (V2). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully closed	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.	.1MFD	High side to stator of antenna section of tuning gang. Low side to B-.	1620KC (400~ Mod.)	Tuning gang fully open	"	A5	"
3.	.1MFD	"	1400KC	Tune for max. output	"	A6	"
4.		Loop	1400KC	1400KC	"	A7	Mount set in cabinet and connect loop. Set dial pointer to 1400KC with tuning gang tuned to 1400KC. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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DATE 11/49 SET #75 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1U4	1U4	6AR	
V4	DET.-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.*	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	67C7-52	AFH684D	UP43215		EL-340	■ Filter
B	40	150						▲ Filter
C	20	150						Filter
C2	100	25	67A4-6	PRS25/100	BR1251		UHC-102	Filament Bypass
C3	250	500	65B6-5	1468-00025	5W5T25	GP2K-250	1FM-325	RF Coupling
C4	15	500	65B6-18			GP1K-15	MS-415	Fixed Trimmer
C5	100		65B6-9	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C6	250	500	65B6-5	1468-00025	5W5T25	GP2K-250	1FM-325	RF Coupling
C7	100		65B6-9	1468-0001	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C8	.05	200	64B1-32	P288-05	GT2S5		TM-15	AVC Filter
C9	1000		65B6-41	1468-001	1W5D1	GP2L-001	1FM-21	Conv. Screen Decoupling
C10	250	500	65B6-5	1468-00025	5W5T25	GP2K-250	1FM-325	RF Filter
C11	.005	600	64B1-12	P688-005	GT6D5	GP2M-005	TM-25	AF Coupling
C12	.05	200	65B1-32	P288-05	GT2S5		TM-15	AF Screen Bypass
C13	100		65B6-9	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C14	.005	600	64B1-12	P688-005	GT6D5	GP2M-005	TM-25	AF Coupling
C15	1000		65B6-41	1468-001	1W5D1	GP2L-001	1FM-21	Output Plate Bypass
C16	.05	400	64B1-22	P488-05	GT4S5		TM-15	Line Filter
C17	.25	200	64B1-28	P488-25	GT2P25		TC-2	Filament Bypass
C18	.18	200	64A2-2	P488-22	GT4P2		72P53	Line Isolation

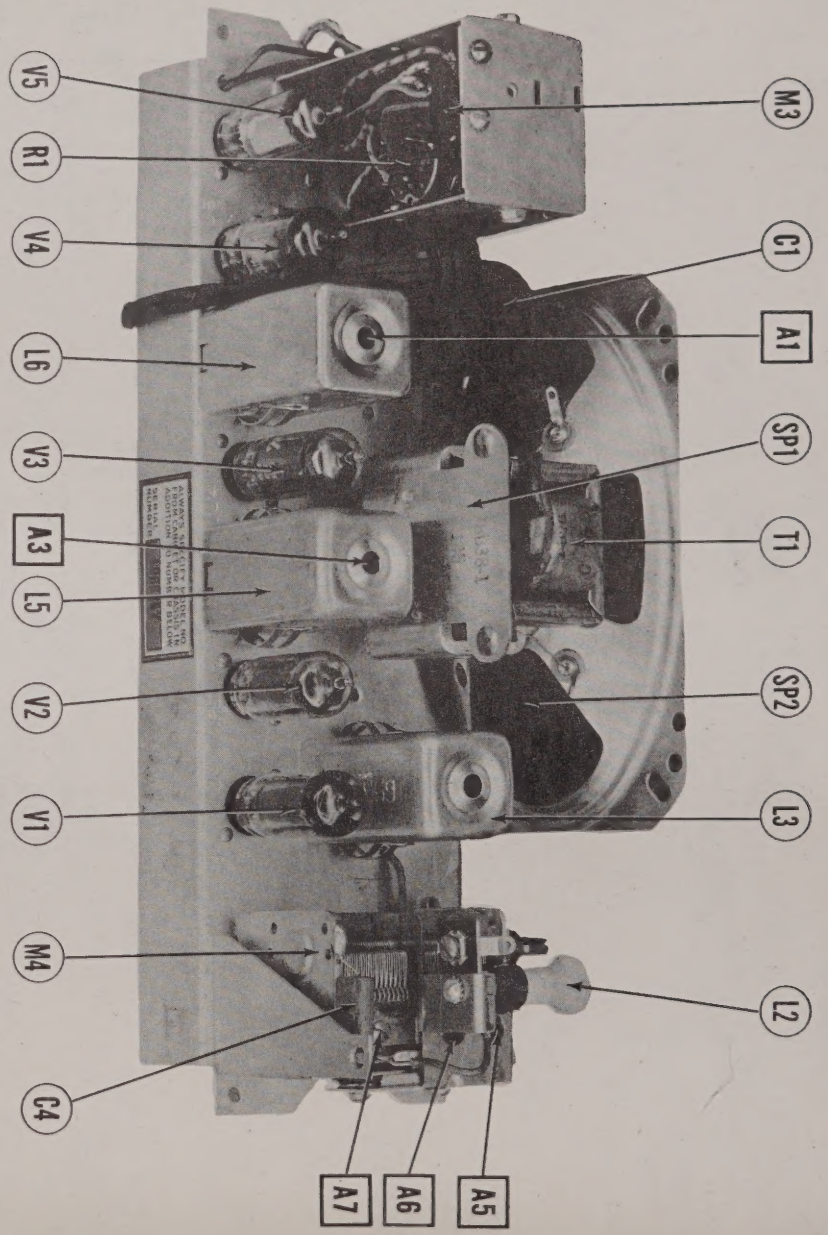
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B1-26	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SW-A2	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	2.2 Meg.	½	60B8-225	BTS-2.2 Meg.	RF Grid
R3	27KΩ	½	60B8-273	BTS-27K	RF Plate
R4	1 Meg.	½	60B8-105	BTS-1 Meg.	Conv. Grid
R5	100KΩ	½	60B8-104	BTS-100K	Osc. Grid
R6	8200Ω	½	60B8-822	BTS-8200	Osc. Anode
R7	3.3 Meg.	½	60B8-335	BTS-3.3 Meg.	AVC Network
R8	10 Meg.	½	60B8-106	BTS-10 Meg.	AF Grid
R9	470KΩ	½	60B8-474	BTS-470K	AF Plate
R10	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Screen
R11	2.2 Meg.	½	60B8-225	BTS-2.2 Meg.	Output Grid
R12	5.6 Meg.	½	60B8-565	BTS-5.6 Meg.	Feedback
R13	47Ω	1	60B14-470		Surge Limiter
R14	2700Ω	1	60B14-272	BW-1-2700	Filter
R15	2400Ω	2.5	61A5-3		Filter Center Tapped, Wire Wound
R16	1500Ω	½	60B8-152	BTS-1500	Filament String
R17	820Ω	½	60B8-821	BTS-820	Filament String
R18	220Ω	½	60B8-221	BW-½-220	Filament String
R19	150Ω	½	60B-151	BW-½-150	Filament String Wire Wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	8000Ω	3.5Ω	480Ω	.6Ω	98A21	A-3879 †	A-2932 †	RO-16 †	† Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM	V. C. IMP. 3.5Ω	78B38-1		46A1 ‡	‡ Remount output transformer.
SP2	CONE DIA. 4" x 6"	V. C. DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
L1	Loop Ant.	2.5Ω				Part of Cabinet.
L2	Ant. Loading Coil	2Ω		69A45-1		
L3	RF Coil	10Ω		69B58		Tapped at 4.8Ω
L4	Osc. Coil	2.5Ω	10Ω	69A57		
L5	Input IF	12Ω	12Ω	72B55	16-6666	
L6	Output IF	12Ω	12.5Ω	72B56	16-6667	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V "A" 90V "B"				753			F6A60	

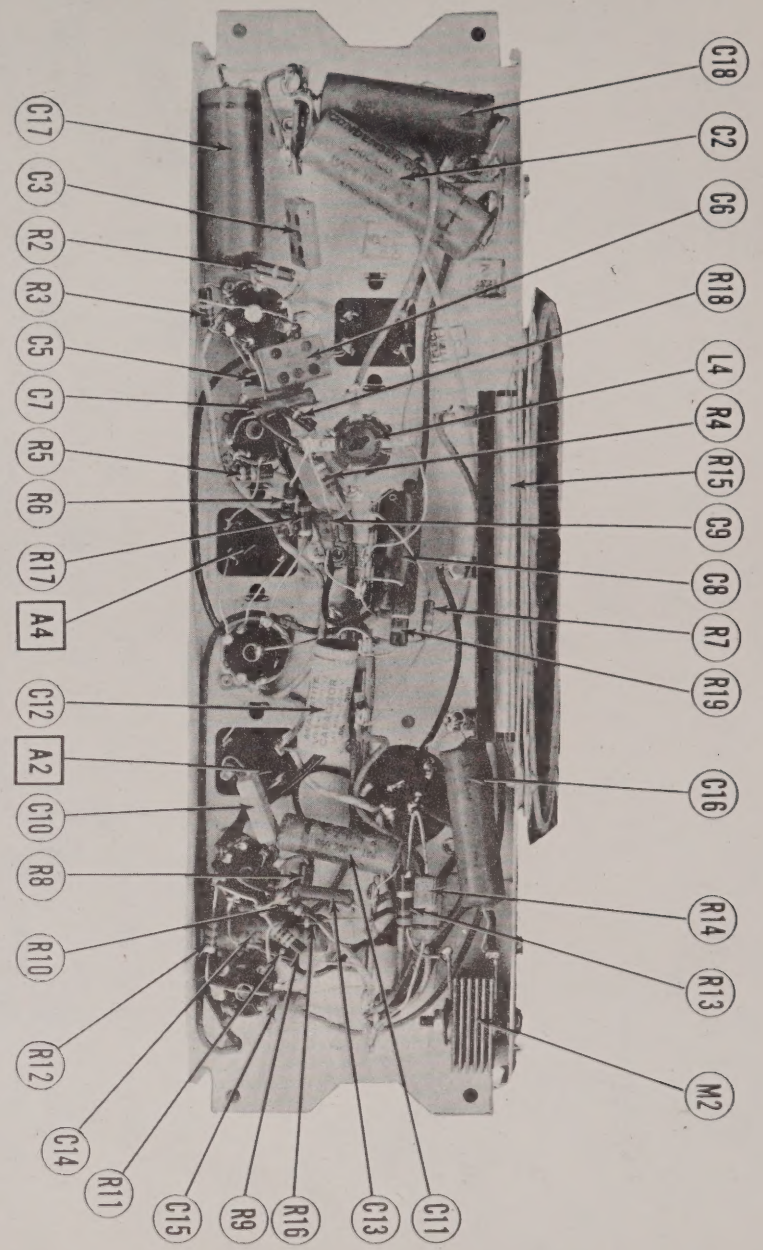
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	ADMIRAL PART No.	SYLVANIA PART NO.		
M2	70MA	93A1-4	NC-5		

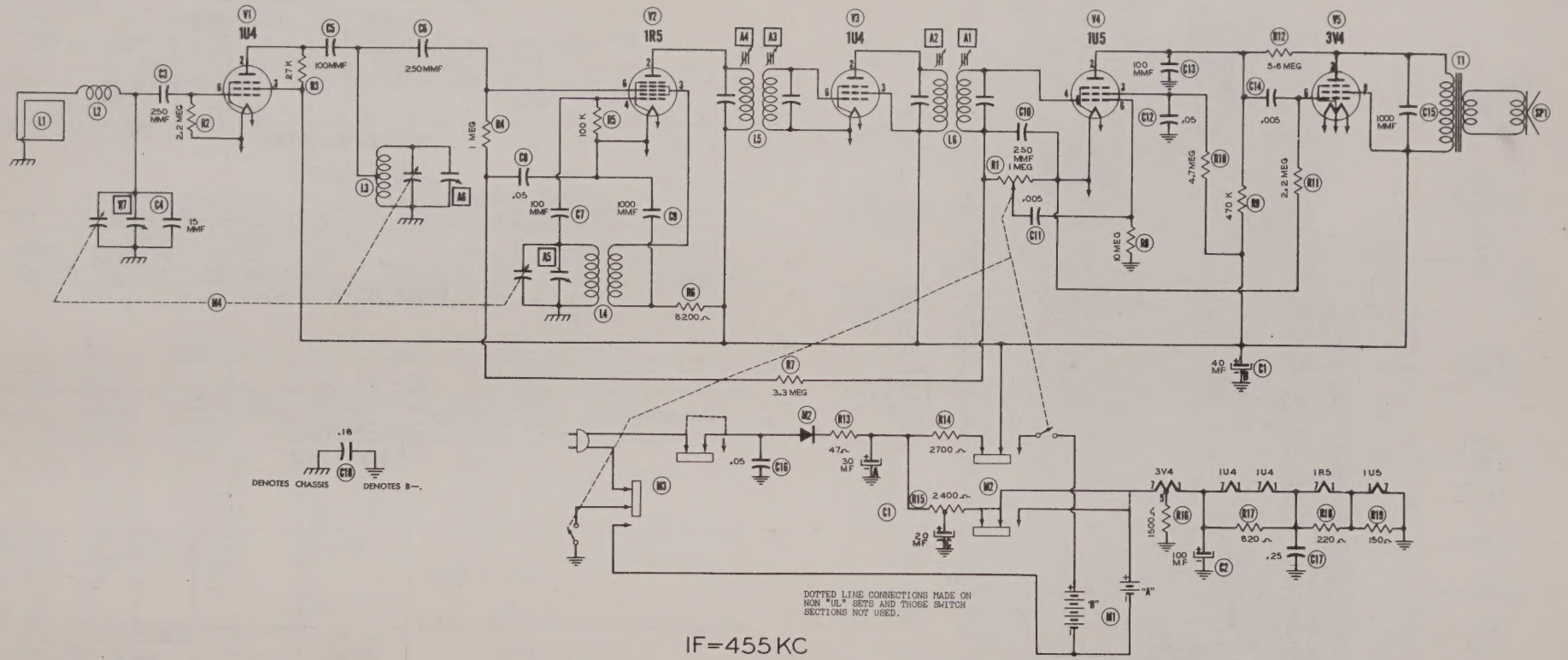
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3A	Switch	77A19-2	AC/DC Battery. ("N" Models)
M3B	Switch	77A19-1	AC/DC Battery ("UL" Models)
M4	3 Gang. Var. Cap.	68B10	(24-432MMF, 28-214MMF, 14-104MMF)
	Cabinet	35D97-1	Model 6Y18
	Cabinet	35D97-2	Model 6Y19
	Dial Pointer	25A32-1	
	Knob	33B35-1	Off-Volume
	Knob	33B35-2	Tuning

CHASSIS—BOTTOM VIEW



ADMIRAL MODEL 6Y18



V & R taken in AC-DC position.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	2.6VDC	45VDC	85VDC	0V	2.6VDC	.2VDC	4.1VDC
V 2	1R5	1.3VDC	85VDC	65VDC	$ -11.5VDC	1.3VDC	0V	2.7VDC
V 3	1U4	4.2VDC	85VDC	85VDC	0V	4.2VDC	4.2VDC	5.6VDC
V 4	1U5	1.3VDC	40VDC	11VDC	.2VDC	1.3VDC	0V	0V
V 5	3V4	5.7VDC	80VDC	85VDC	0V	7VDC	0V	8.4VDC

$ Taken with vacuum tube voltmeter.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	130KΩ	12.7KΩ	Inf.	*	2.2Meg.	*
V 2	1R5	*	12.7KΩ	111KΩ	100KΩ	*	5.3Meg.	*
V 3	1U4	*	12.7KΩ	12.7KΩ	Inf.	*	50Ω	*
V 4	1U5	*	1470KΩ	14.7Meg.	1 Meg.	*	10 Meg.	*
V 5	3V4	*	13KΩ	12.7KΩ	Inf.	*	2.2Meg.	*

† Measured from output of M2.

* Do not use ohmmeter to measure filament resistance.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

AIR KING MODELS
A1001A, A2000, A2001, A2002, A2010

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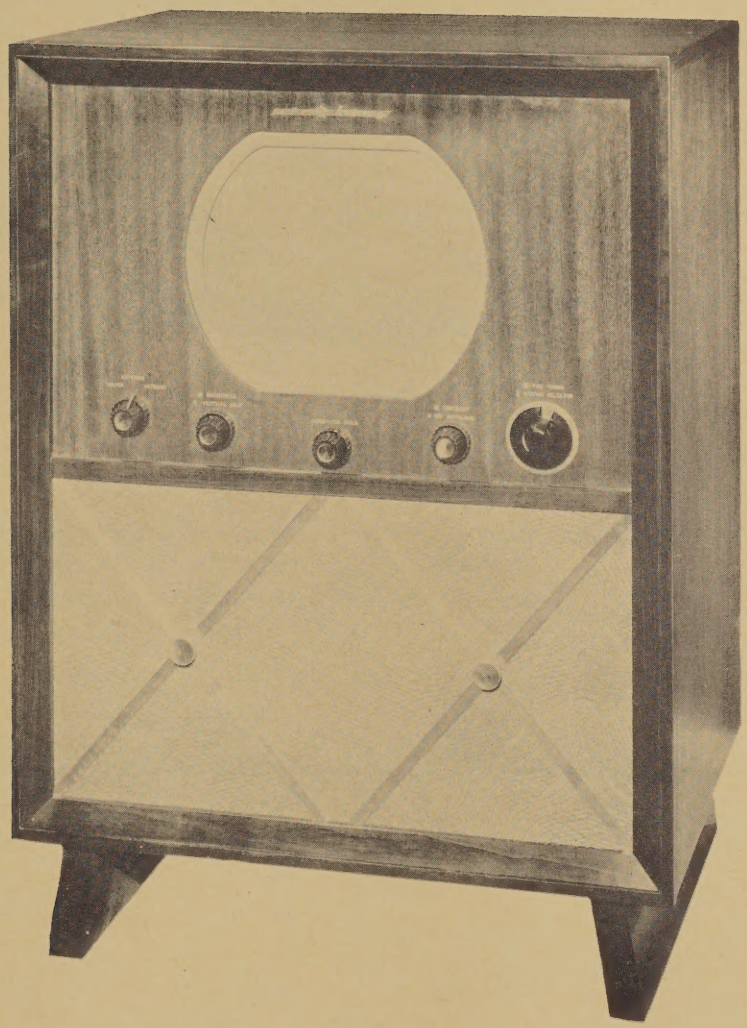

AIR KING MODELS
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DATE 11-49 SET 75 FOLDER 2

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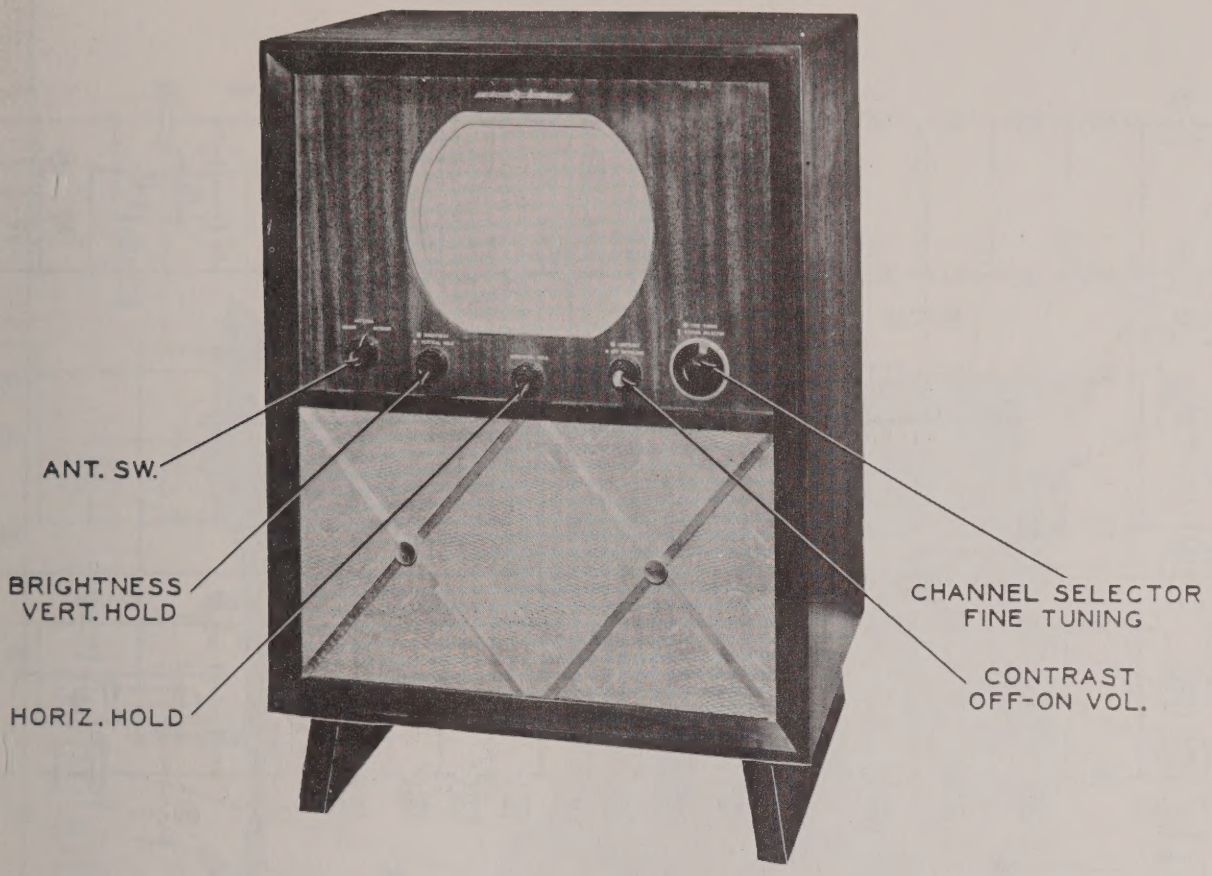
AIR KING MODELS A1001A, A2000, A2001, A2002, A2010



AIR KING MODELS
A1001A, A2000, A2001, A2002, A2010

TRADE NAME	Air King, Models A1001A, A2000, A2001, A2002, A2010
MANUFACTURER	Air King Products Co., 170 53rd St., Brooklyn, New York
TYPE SET	Television Receiver
TUBES	Twenty-One
POWER SUPPLY	110-120 Volts AC 60 Cycle
TUNING RANGE-Channels 2 thru 13	RATING: 1.75 Amp. @ 117 Volts AC

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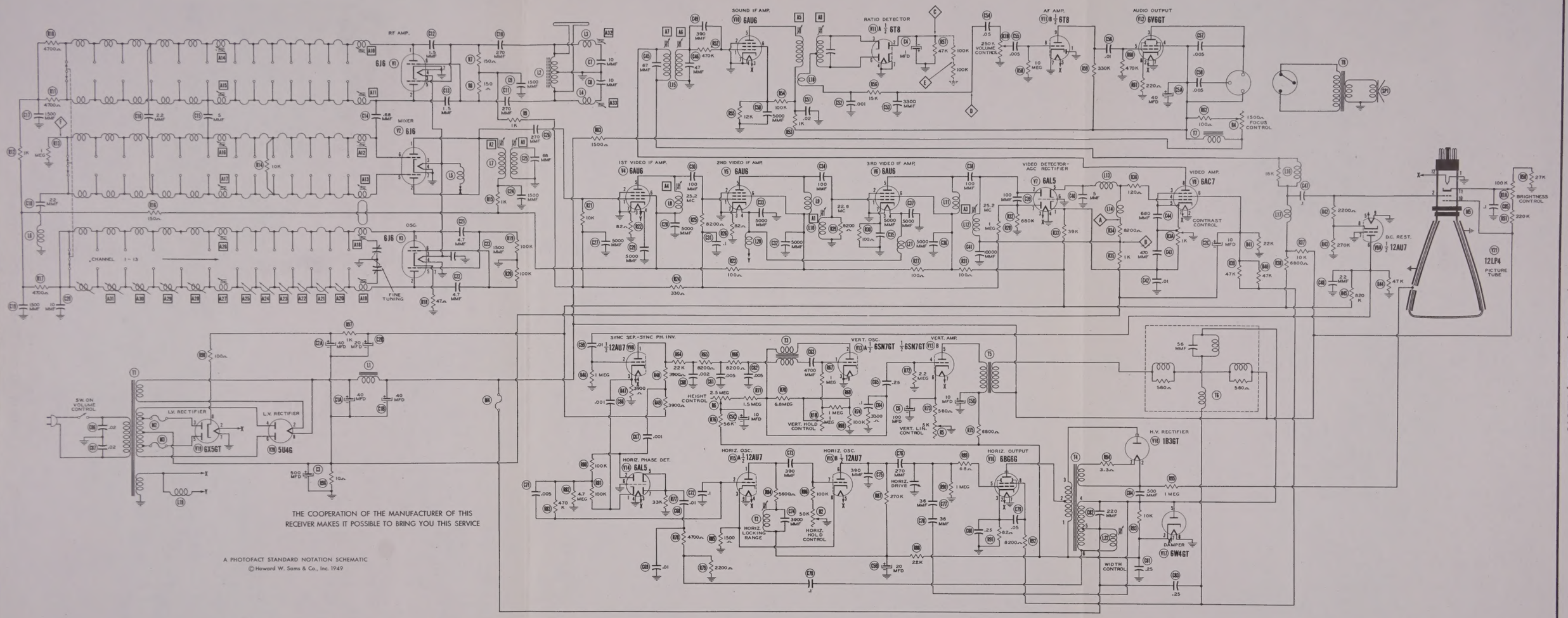

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AIR KING MODELS
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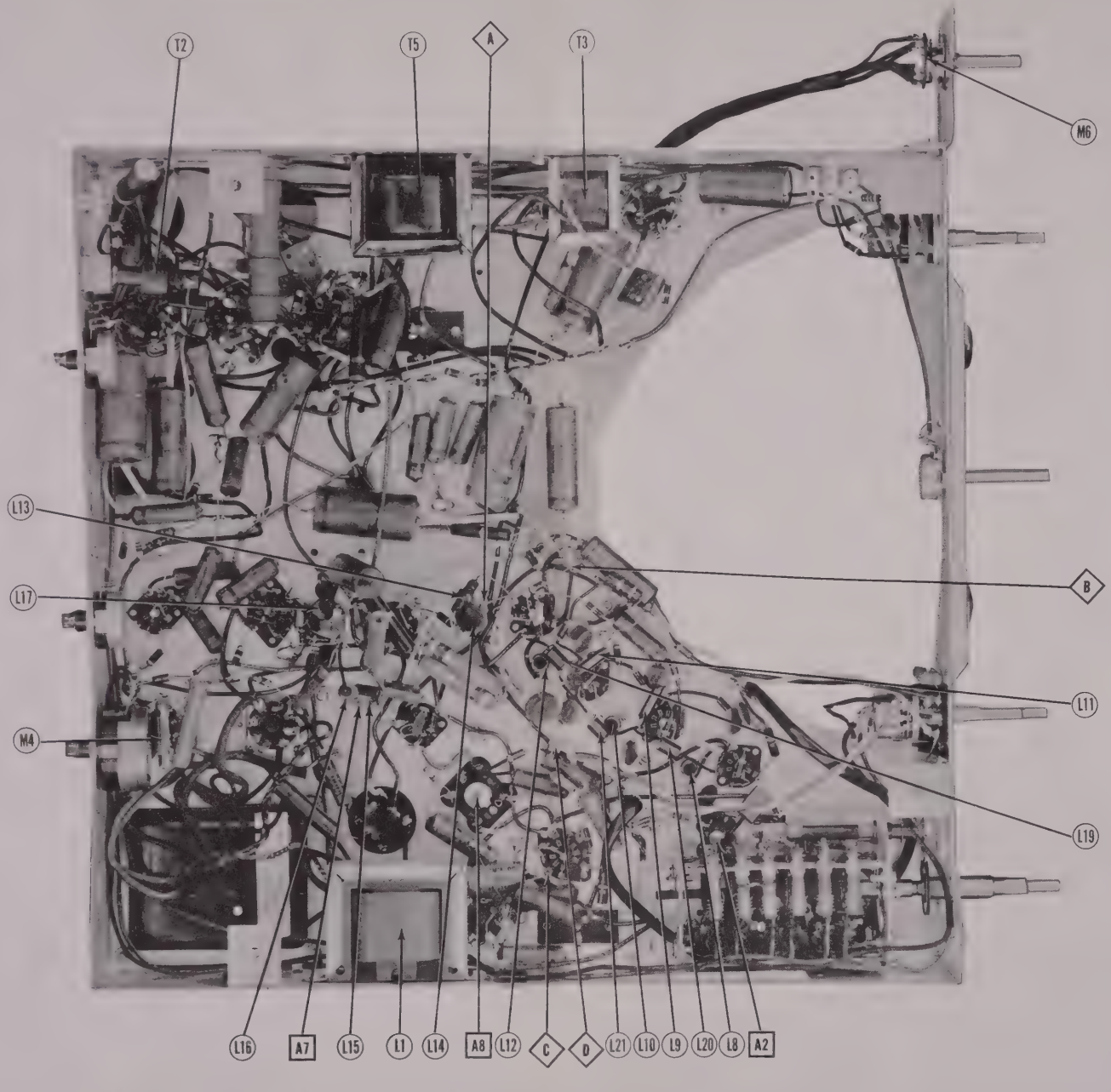
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If set is to be aligned with the picture tube removed, remove the horizontal oscillator tube V15 to disable the high voltage.

The local oscillator tube V3 should be removed during IF Alignment to prevent erroneous indications.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	22.8MC (Unmod.)	Any	DC Probe to Point (A) Common to Point point (B)	A1,A2	Adjust for maximum deflection.
2.		"	25.2MC (Unmod.)	"	"	A3,A4	"
3.		"	21.25MC (Unmod.)	"	"	A9	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.		High side to ungrounded tube shield floating over mixer tube V2. Low side to chassis.	24MC (10MC Sweep)	22.8MC 25.2MC	Any	Vert. Amp. to Point A. Low side to chassis.		Check for response as per Fig 1. with markers as shown. If necessary SLIGHTLY retouch A1, A2, A3, and A4 for optimum response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point C to chassis. The junction of these two resistors is alignment Point E as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V10) Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C) Common to chassis.	A5,A6, A7	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (D) Common to Point point (E)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 7.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C) Low side to chassis.	A5,A6, A7	Disconnect stabilizer capacitor C4. Adjust A5, A6, and A7 for maximum amplitude and symmetry as per Fig 2.
6.	.01MFD	"	"	"	"	Vert. Amp. to Point (D) Low side to chassis.	A5,A8	Reconnect stabilizer capacitor C4. Adjust A8 so 4.5MC marker occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines.

RF & MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

Connect a 1000MMF capacitor from the grid of the first video amplifier (6AU6, V4) to chassis. Keep leads short as possible.

Connect the DC Probe of VTVM to the junction of R24 and C31, common to chassis. Set contrast control to read -3V.

The signal generator should be terminated with a resistance equal to its output impedance (usually 50 ohms).

These adjustments are normally very stable and alignment should not be attempted unless they are known to be out of alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	177MC (10MC Sweep)	175.25MC 179.75MC	7	Vert. Amp. thru 10KΩ to Point (F) Low side to chassis.	A10,A11 A12,A13	Adjust for approximately flat top response as per Fig 4 with markers above 70%.
8,	"	"	183MC (10MC Sweep)	181.25MC 185.75MC	8	"		Check for response curve as per Fig 4.
9.	"	"	189MC (10MC Sweep)	187.25MC 191.75MC	9	"		"
10.	"	"	195MC (10MC Sweep)	193.25MC 197.75MC	10	"		"
11.	"	"	201MC (10MC Sweep)	199.25MC 203.75MC	11	"		"
12.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"		"
13.	"	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"		"

If markers are below 70% on any channel make slight adjustment of A10, A11, A12, and A13 with channel selector on that channel. Recheck all high band channels.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC Sweep)	83.25MC 87.75MC	6	Vert. Amp. thru 10KΩ to Point (F) Low side to chassis.	A14,A15 A16,A17	Adjust for approximately flat top response as per Fig. 4 with markers above 70%.
15.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"		Check for response as per Fig 4.
16.	"	"	69MC (10MC Sweep)	67.25MC 71.75MC	4	"		"
17	"	"	63MC (10MC Sweep)	61.25MC 65.75MC	3	"		"
18.	"	"	57MC (10MC Sweep)	55.25MC 59.75MC	2	"		"
	If markers are below 70% on any channel make slight adjustment of A14, A15 A16, and A17 with channel selector on that channel. Recheck all low band channels.							

OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A18,A19	Adjust for response curve as per Fig 5 with markers as shown.
20.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"	A20	"
21.	"	"	201MC (10MC Sweep)	199.25MC 203.75MC	11	"	A21	"
22.	"	"	195MC (10MC Sweep)	193.25MC 197.75MC	10	"	A22	"
23.	"	"	189MC (10MC Sweep)	187.25MC 191.75MC	9	"	A23	"
24.	"	"	183MC (10MC Sweep)	181.25MC 185.75MC	8	"	A24	"
25.	"	"	177MC (10MC Sweep)	175.25MC 179.75MC	7	"	A25	"
26.	"	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A26,A27	"
27.	"	"	79MC (10MC Sweep)	77.25MC 81.75MC	5	"	A28	"
28.	"	"	69MC (10MC Sweep)	67.25MC 71.75MC	4	"	A29	"
29.	"	"	63MC (10MC Sweep)	61.25MC 65.75MC	3	"	A30	"
30.	"	"	57MC (10MC Sweep)	55.25MC 59.75MC	2	"	A31	"

WAVE TRAP ADJUSTMENT

Wave traps A32 and A33 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference, set fine tuning control until interference is at maximum. Adjust A32 and A33 for minimum interference in the picture and sound, keeping the cores at approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.

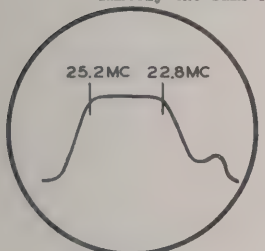


FIG. 1

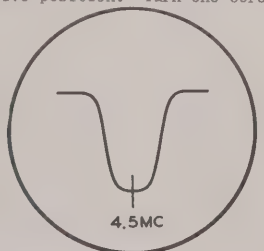


FIG. 2

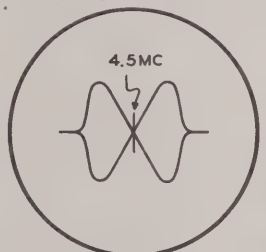


FIG. 3

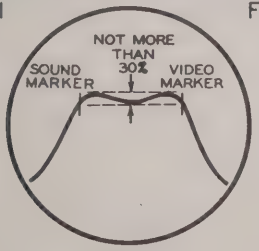


FIG. 4

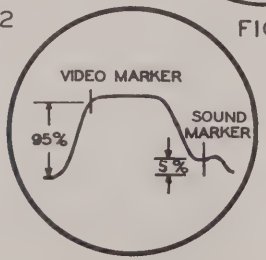
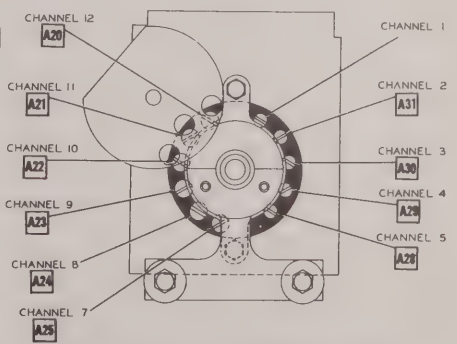


FIG. 5



RF OSCILLATOR ALIGNMENT POINTS

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	85VDC	85VDC	6.3VAC	0V	-.8VDC	-.8VDC	0V		
V 2	6J6	115VDC	115VDC	6.3VAC	0V	-2.4VDC	-4.6VDC	0V		
V 3	6J6	60VDC	60VDC	6.3VAC	0V	§-4.2VDC	§-3.6VDC	.4VDC		
V 4	6AU6	-.6VDC	0V	0V	6.3VAC	125VDC	125VDC	.5VDC		
V 5	6AU6	-.7VDC	0V	0V	6.3VAC	126VDC	126VDC	.6VDC		
V 6	6AU6	0V	0V	0V	6.3VAC	128VDC	128VDC	1VDC		
V 7	6AL5	0V	-2VDC	6.3VAC	0V	-1VDC	0V	-.5VDC		
V 8	6AC7	0V	0V	1.4VDC	-1.8VDC	1.4VDC	155VDC	6.3VAC	215VDC	
V 9	12AU7	125VDC	0V	5.8VDC	6.3VAC	6.3VAC	5.6VDC	0V	1VDC	0V
V 10	6AU6	-.6VDC	0V	6.3VAC	0V	245VDC	25VDC	0V		
V 11	6T8	0V	-.8VDC	-.4VDC	0V	6.3VAC	-.4VDC	0V	-.6VDC	70VDC
V 12	6V6GT	0V	6.3VAC	235VDC	250VDC	0V	245VDC	0V	12VDC	
V 13	6SN7GT	-40VDC	60VDC 140VDC	0V	0V	330VDC	6.2VDC 25VDC	6.3VAC	0V	
V 14	6AL5	2.2VDC	-1.2VDC	6.3VAC	0V	0V	0V	0V		
V 15	12AU7	240VDC	.2VDC	10VDC	6.3VAC	6.3VAC	100VDC	-3.6VDC	10VDC	0V
V 16	6BG6G	0V	6.3VAC	7.5VDC	-1.7VDC	-1.4VDC	-1.3VDC	0V	250VDC	TOP CAP ♦
V 17	6W4GT	0V	280VDC	410VDC	125VDC	340VDC	410VDC	6.3VAC	0V	
V 18	1B3GT	♦ Do not Measure								
V 19	6X5GT	0V	6.3VAC	165VAC	135VDC	165VAC	0V.	0V	175VDC	
V 20	5U4G	0V	370VDC	340VDC	365VAC	0V	365VAC	340VDC	370VDC	
V 21	12LP4	0V	1VDC	PIN 10 340VDC	PIN 11 125VDC	PIN 12 6.3VAC				

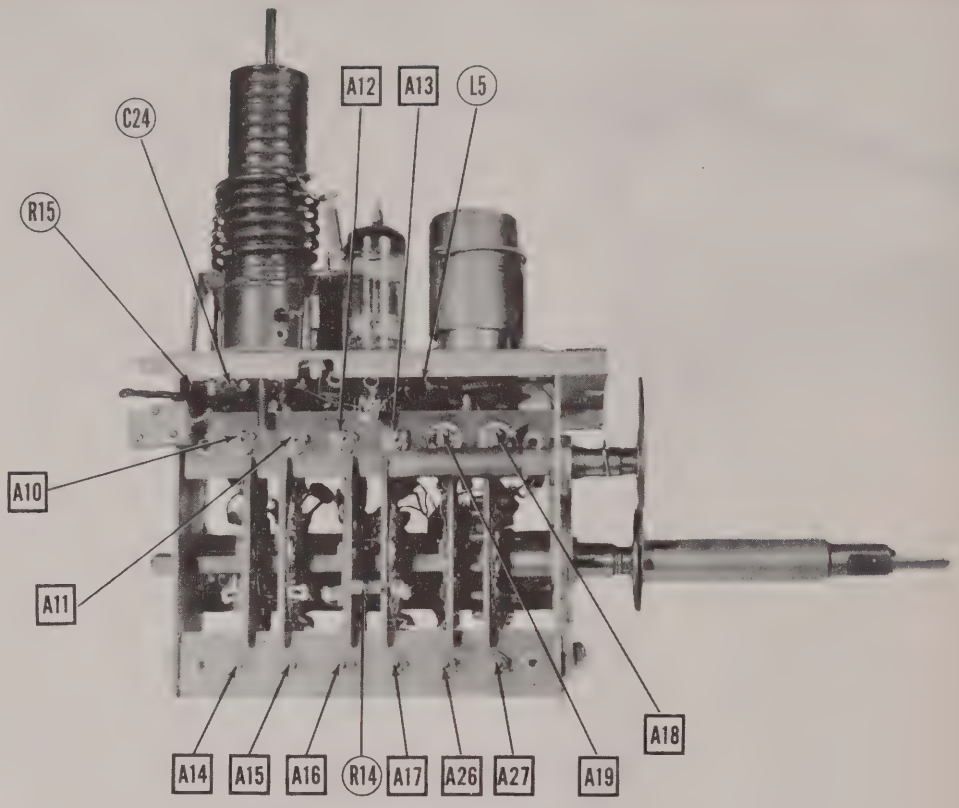
♦ Do not measure.
§ Taken with Vacuum Tube Voltmeter

RESISTANCE READINGS

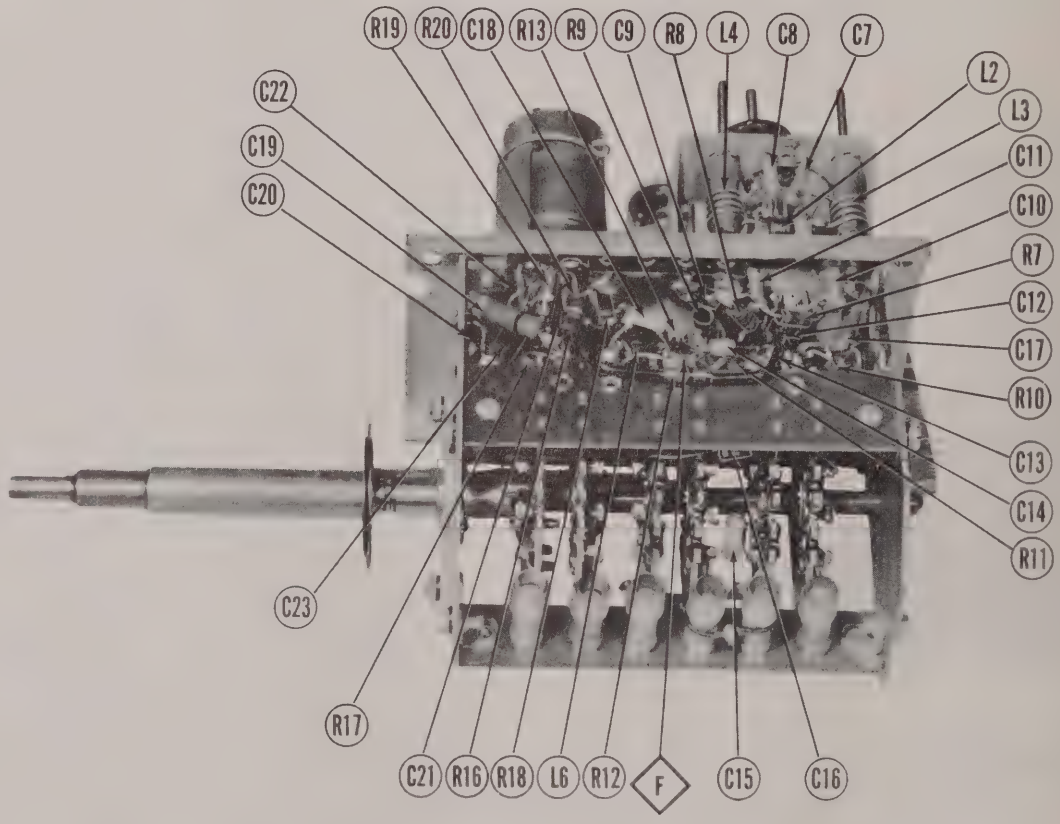
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†4KΩ	†4KΩ	.2Ω	0Ω	1.6Meg.	1.6Meg.	0Ω		
V 2	6J6	†2KΩ	†2KΩ	.2Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V 3	6J6	†5.6KΩ	†5.6KΩ	.2Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6AU6	1.6 Meg.	0Ω	0Ω	.2Ω	†1200Ω	†1200Ω	80Ω		
V 5	6AU6	1.6 Meg.	0Ω	0Ω	.2Ω	†1200Ω	†1200Ω	80Ω		
V 6	6AU6	.2Ω	0Ω	0Ω	.2Ω	†1000Ω	†1000Ω	100Ω		
V 7	6AL5	1Ω	1000Ω	.2Ω	0Ω	10KΩ	0Ω	680KΩ		
V 8	6AC7	0Ω	0Ω	750Ω	10KΩ	750Ω	20KΩ	.2Ω	*10KΩ	
V 9	12AU7	†10KΩ	1 Meg.	3900Ω	.2Ω	.2Ω	47KΩ	0Ω	270KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	.2Ω	0Ω	*3KΩ	*26KΩ	0Ω		
V 11	6T8	0Ω	47KΩ	Inf.	0Ω	.2Ω	Inf.	0Ω	10 Meg.	*330KΩ
V 12	6V6GT	Inf.	.2Ω	*2000	*1800Ω	470KΩ	15KΩ	0Ω	220Ω	
V 13	6SN7GT	2 Meg.	♦2.8Meg. ♦1.5Meg.	0Ω	2.2 Meg.	♦7KΩ	5.6KΩ 600Ω	.2Ω	0Ω	
V 14	6AL5	4.7Meg.	4.7 Meg.	.2Ω	0Ω	33KΩ	0Ω	33KΩ		
V 15	12AU7	♦27KΩ	4.7 Meg.	1500Ω	.2Ω	.2Ω	♦280KΩ	150KΩ	1500Ω	0Ω
V 16	6BG6G	Inf.	.2Ω	80Ω	50KΩ	1 Meg.	1 Meg.	0Ω	*8200Ω	♦100Ω
V 17	6W4GT	2500Ω	♦22KΩ	♦0Ω	100KΩ	♦10KΩ	♦0Ω	.2Ω	0Ω	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦300Ω
V 19	6X5GT	Inf.	.2Ω	20Ω	†1000Ω	20Ω	Inf.	0Ω	20KΩ	
V 20	5U4G	Inf.	20KΩ	20KΩ	40Ω	Inf.	38Ω	20KΩ	20KΩ	
V 21	12LP4	0Ω	270KΩ	PIN 10 *150Ω	PIN 11 100KΩ	PIN 12 .5Ω				

† Measured from pin 8 of V19
* Measured from pin 2 of V20
♦ Measured from pin 3 of V17

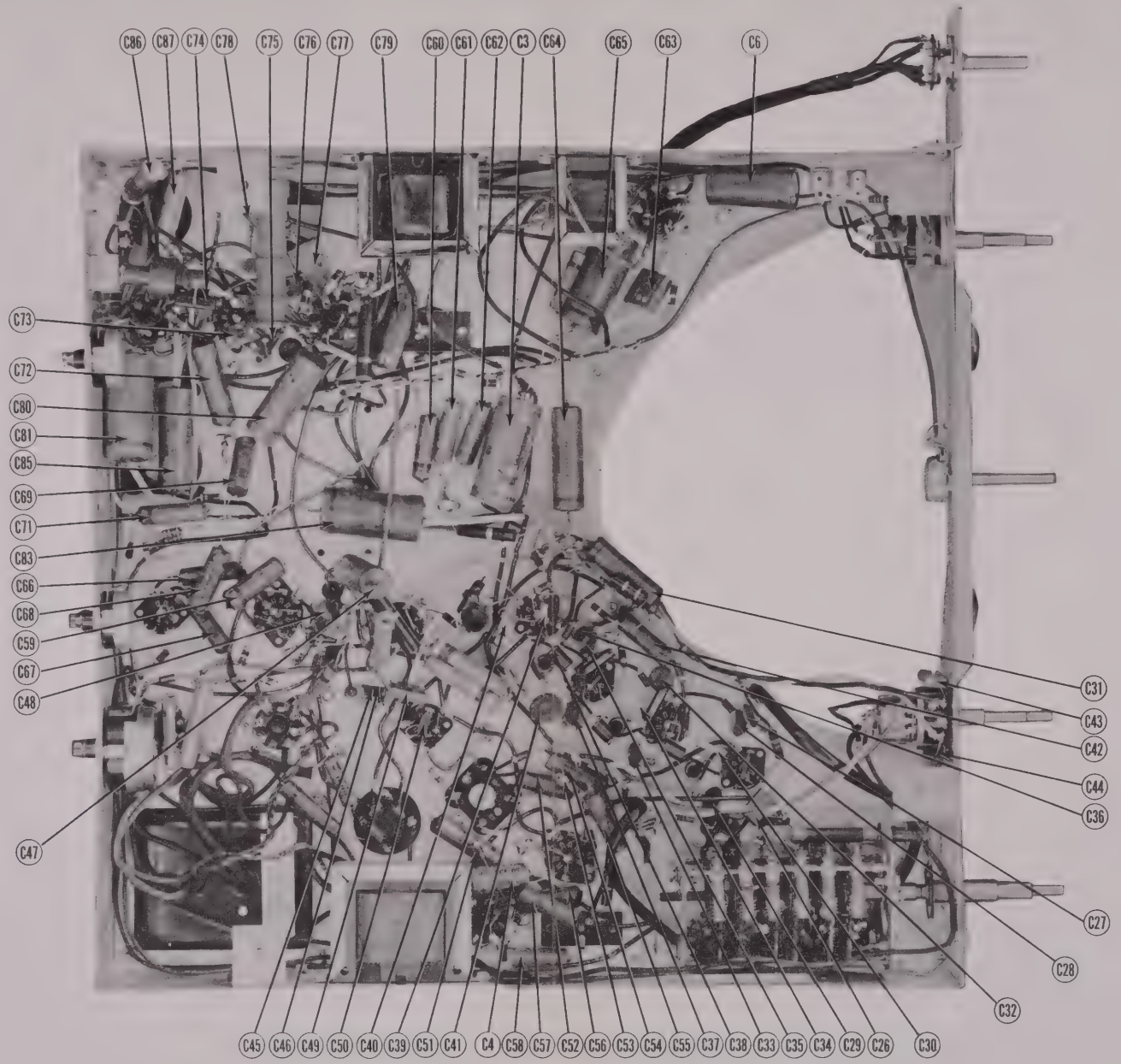
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-LEFT SIDE

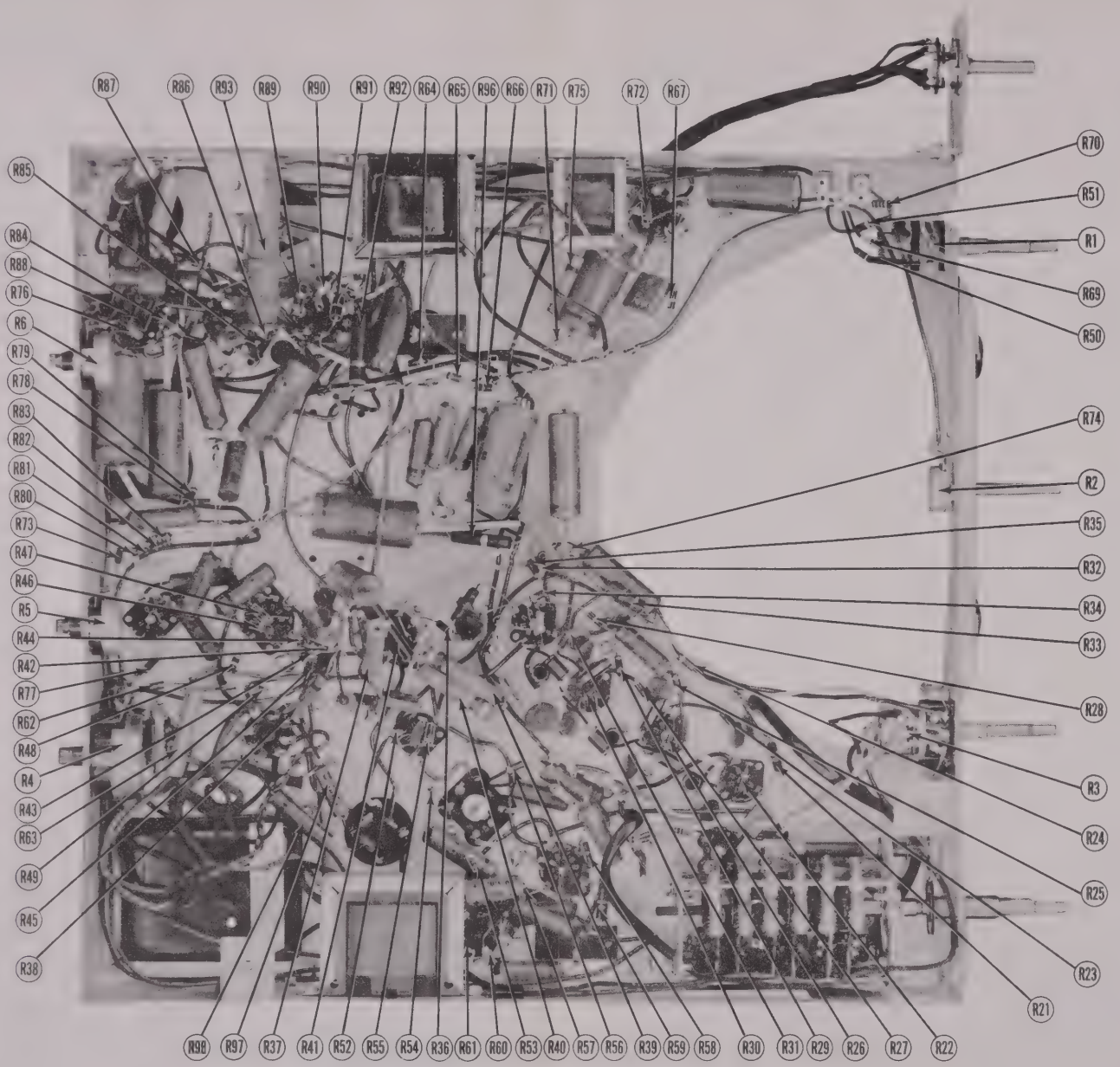


RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

BLOCK DIAGRAM



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIR KING PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.5Ω	PD58121 § ▲	ST-119 # MOD.P10-T	10A4A	# Replace output trans. to match 6-8Ω voice coil. § Used in console models only. ▲ 5" speaker used in table models only.
B	PM					
	CONE DIA.	V. C. DIA.				
SP2A B	9 3/4"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.195A	170Ω	6.6Henries	PB1404	C-2325	C-2991††	TR-4200	†† Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIR KING PART No.	MEISSNER PART No.	
L2	Ant. Input	0Ω				Part of RF tuner.
L3	Interference Trap	0Ω				Part of RF tuner.
L4	Interference Trap	0Ω				Part of RF tuner.
L5	Fil. Choke	.1Ω		PP28264		
L6	Mixer Grid Trap	0Ω				Part of RF tuner.
L7	1st Video IF	.1Ω	0Ω			Part of RF tuner.
L8	2nd Video IF	.2Ω		PP3392		
L9	IF Choke	3Ω		PA28253		
L10	3rd Video IF	.2Ω		PP3392		
L11	IF Choke	3Ω		PA28253		
L12	4th Video IF	.2Ω		PP3392		
L13	Peaking	7Ω		PA28255-1		
L14	Peaking	20Ω		PA28262		
L15	Sound Take-Off	1.5Ω	1.5Ω	PA28254		
L16	Peaking	11Ω		PA28255-3		
L17	Peaking	14Ω		PA28255-4		
L18	Ratio Det.	8Ω	1Ω	PB3393		
L19	Fil. Choke	.1Ω		PP28264		
L20	Fil. Choke	.1Ω		PP28264		
L21	Fil. Choke	.1Ω		PP28264		
L22	Horiz. Width Control	.5Ω		PP28258		

MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
M1A	Tuner Assembly	PP54616	RCA Tuner
B	Tuner Assembly	PB54617	Standard Coil
M2	Fuse		Not used on all models.
M3	Fuse		Not used on all models.
M4	Fuse	PP54682	Types 3AG 1/4 Amp.
M5	Ion Trap	PP54623	PM type
	Socket	18101	Speaker
	Socket	PP18160-1	Picture tube
	Cabinet	PE6059	
	Escutcheon	PP54621	Used with tuner M1A
	Escutcheon	59458	Used with tuner M1B
	Knob	PP39187	On-Off, volume control
	Knob	PP39189	Horiz. hold control
	Knob	PP39187	Vert. hold control
	Knob	PP39188	Contrast control
	Knob	PP39188	Brightness control
	Knob	PA39192	Ant. switch
	Knob	PP39191	Channel selector
	Knob	PP39190	Fine tuning control
	Safety Glass	PC62260	
	Ant. Switch	3828-2	

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6J6	7BF	
V2	Mixer		6J6	7BF	
V3	Oscillator		6J6	7BF	
V4	1st Video IF Amp.	PP51135	6AU6	7BK	
V5	2nd Video IF Amp.	PP51135	6AU6	7BK	
V6	3rd Video IF Amp.	PP51135	6AU6	7BK	
V7	Video Det.& AGC Rect.	PP51136	6AL5	6BT	
V8	Video Amp.	PP51137	6AC7	6N	
V9	DC Rest.-Sync. Sep.-Sync. Phase Inverter	PP51143	12AU7	9A	
V10	Sound IF Amp.	PP51135	6AU6	7BK	
V11	Ratio Det.-AF Amp.	PP51138	6J6	6K	
V12	Audio Output	PP51139	6V6GT	7AC	
V13	Vert. Osc.-Vert. Amp.	PP51141	6SN7GT	8BD	
V14	Horiz. Phase Det.	PP51136	6AL5	6BT	
V15	Horiz. Osc.	PP51143	12AU7	9A	
V16	Horiz. Output	PP51142	6BQ6GA	8KT	
V17	Damper	PP5146	6W4GT	4CG	
V18	HV Rectifier	PP51147	1B3GT	8C	
V19	LV Rectifier	PP51145	6X4GT	6S	
V20	LV Rectifier	PP51144	6X4W	8T	
V21	Picture Tube	PP51149	12LJ4		Used in models A2001 and A2002.
V21	Picture Tube		10BP4		Used in models A1001A & A2000 & A2010

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	PA20126	AFH88J	UP4445		TVL-64	▰ Filter
B	40	450						▲ Filter
C2A	40	250	PA20127	AFH84F2D	UP43145C		D9041	▰ Filter
B	20	250			§			■ Filter
C	20	450						▲ V. Amp. Screen Byp.
C3	500	6	PP20128	PRS6/500	BRH605		TVA-4	Bias Filter
C4	1	50	PP20129	E26E39	BBR1-50		TVA-11	Stabilizing Cap.
C5A	40	450	PA20125	AF8422J	UP421145		TVL-40	▰ Filter
B	20	450						■ Decoupling
C	10	450						▲ Vert. Osc. Dec.
D	10	450						Vert. Output Dec.
C6	100	25	PP20130	PRS50/100	BRH251A		TVA-8	Vert. Output Cath. Byp.
C7	10					NP0K-10		Fixed Trimmer
C8	10					NP0K-10		Fixed Trimmer
C9	1500					GP2L-0015		AGC Filter
C10	270					GP2K-270		RF Coupling
C11	270					GP2K-270		RF Coupling
C12	1.5							Neutralizing
C13	1.5							Neutralizing
C14	.68							RF Coupling
C15	5					NP0K-5		RF Coupling
C16	2.2							RF Coupling
C17	1500					GP2L-0015		RF Decoupling
C18	22					GP1K-22		Fixed Trimmer
C19	1500					GP2L-0015		Osc. Decoupling
C20	10					NP0K-10		Fixed Trimmer
C21	4.7					NP0K-4.7		Osc. Feedback
C22	4.7					NP0K-4.7		Osc. Feedback
C23	1500					GP2L-0015		Filament Bypass
C24	1500					GP2L-0015		Mixer Decoupling
C25	68							Fixed Trimmer
C26	270	500		1468-00025	5W5T25	GP1K-270	1FM-325	IF Coupling
C27	5000		PP19109	1467-005	1D5D5	811-005	29C1	AGC Filter
C28	5000		PP19109	1467-005	1D5D5	811-005	29C1	1st V. IF Decoupling
C29	5000		PP19109	1467-005	1D5D5	811-005	29C1	1st V. IF Fil. Bypass
C30	100		PP19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C31	.1	400	PP19111	P488-1	GT4P1		TM-1	AGC Filter
C32	5000		PP19109	1467-005	1D5D5	811-005	29C1	2nd V. IF Decoupling
C33	5000		PP19109	1467-005	1D5D5	811-005	29C1	2nd V. IF Fil. Bypass
C34	100		PP19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C35	5000		PP19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Cath. Bypass
C36	5000		PP19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Decoupling
C37	5000		PP19109	1467-005	1D5D5	811-005	29C1	3rd V. IF Fil. Bypass
C38	100		PP19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C39	100		PP19110	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling *
C40	5		PP19114	1468-000005	5W5V5	NP0K-5	MS-55	V. Diode Filter
C41	10000		PP19113	P488-01	GT4S1	821-01	36C1	Bias Filter
C42	.01	400	PP19116	P488-01	GT4S1	GP2-335-01	TM-11	AGC Filter
C43	470	500	PP19105	1468-0005	5W5T5	GP2K-470	1FM-35	V. Amp. Cath. Bypass
C44	680	500	PP19104		1W5T7	GP2K-680	1FM-37	V. Amp. Cath. Bypass
C45	67	500						Fixed Trimmer
C46	47			1469-00005	5R5Q5	NP0M-50	MS-45	Fixed Trimmer
C47	.1	600	PP19121	P688-1	GT6P1		TM-1	Video Coupling
C48	22	500	PP1990	1468-0000025	5W5Q25	GP1K-22	MS-425	DC Res. Plate Bypass
C49	390	500	PP19117	1468-0004	5W5T4	GP2K-390	1FM-54	S. IF Coupling †
C50	5000		PP19109	1467-005	1D5D5	811-005	29C1	S. IF Screen Bypass
C51	.02	600	PP19115	P688-02	GT6S2		TM-12	S. IF Decoupling
C52	.001	600	PP19103	P688-001	GT6D1	GP2L-001	TM-21	Diode Load Cap.
C53	3300		PP19118			GP2M-0033		De-emphasis
C54	.05	200	PP19119	P288-05	GT2S5		TM-15	Audio Coupling
C55	.005	600	PP1987	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	.01	600	PP1988	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C57	.005	600	PP1987	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C58	.005	600	PP1987	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass
C59	.01	600	PP1988	P688-01	GT6S1	GP2-335-01	TM-11	Sync. Coupling
C60	.002	600	PP19101	P688-002	GT6D2	GP2M-002	TM-22	Integrator Net.
C61	.005	600	PP19120	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C62	.005	600	PP19120	P688-005	GT6D5	GP2M-005	TM-25	Integrator Net.
C63	470	500	PP1992	1467-005	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C64	.1	600	PP19121	P688-1	GT6P1		TM-1	Vert. Discharge
C65	.25	400	PP19106	684-25	GT6P25		TC-2	Vert. Sweep Coupling
C66	.01	600	PP1991	P688-001	GT6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C67	.01	600	PP1991	P688-001	GT6D1	GP2L-001	TM-21	Hor. Sync. Coupling
C68	.01	600	PP1988	P688-01	GT6S1	GP2-335-01	TM-11	AFC Filter
C69	.01	600	PP1988	P688-01	GT6S1	GP2-335-01	TM-11	AFC Filter
C70	.1	600	PP19100	P688-1	GT6P1		TM-1	AFC Feedback
C71	.005	600	PP1987	P688-005	GT6D5	GP2M-005	TM-25	Hor. Sync. Coupling
C72	.1	200	PP19111	P288-1	GT2P1		TM-1	Hor. Osc. Grid Cap.
C73	390	500	PP19122	1468-0004	5W5T4	GP2K-390	1FM-54	Hor. MV Feedback
C74	3300	500	PP19107					Fixed Trimmer
C75	390	500	PP1993	1468-00004	5W5T4	GP2K-390	1FM-54	Hor. Discharge
C76	270	500	PP1994	1468-00025	5W5T25	GP2K-270	1FM-325	Hor. Sweep Coupling
C77	36	1500	PP19135					Hor. Feedback
C78	36	1500	PP19135					Hor. Feedback
C79	.05	600	PP1996	P688-05	GT6S5		TM-15	Hor. Output Screen Byp.
C80	.25	400	PP1995	P488-25	GT4P25		TC-2	Hor. Output Cath. Bypass
C81	.25	600	PP19108	684-25	GT6P25		TC-2	Damper Filter
C82	220	2500	PP19136					Fixed Trimmer ‡
C83	.25	600	PP19108	684-25	GT6P25		TC-2	Hor. Sweep Coupling
C84	50%	10000	PP1998-1			410-500		HV Filter
C85	.1	600	PP1989	P688-1	GT6P1		TM-1	Pic. Tube Cath. Dec.
C86	.02	600	PP19106	P688-02	GT6S2		TM-12	Line Filter
C87	.02	600	PP19106	P688-02	GT6S2		TM-12	Line Filter

* Some models use 120MMF in this application.
† Some models use 39MF in this application.
‡ Used only in models with 12 inch picture tube. Some models use four 200MF capacitors in a series parallel combination in this application.
§ Omit bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	100KΩ	½ }	PA24100			Brightness Control (Dual Concentric)
B	1 Meg.	½ }				Vert. Hold Control
R2	50KΩ	½	PA24101	Q11-123		Horiz. Hold Control
R3A	100Ω	2 }	PA2499			Contrast Control, Tapped @ 750Ω, Wire Wound
B	250KΩ	½ }				Volume Control and Switch (Dual Concentric)
R4	1500Ω	4	PP2525		10-1500	Focus Control (Wire Wound)
R5	500Ω	½	PP2523	Q11-114	M-19-S	Vert. Linearity Control
R6	2.5Meg.	½	PP2524	Q11-239		Height Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	150Ω	½			RF Grid
R8	150Ω	½			RF Grid
R9	1000Ω	½			Bias Filter
R10	4700Ω	½			RF Plate
R11	4700Ω	½			RF Plate
R12	1000Ω	½			RF Decoupling
R13	1 Meg.	½			Mixer Grid
R14	10KΩ	½		BTS-10K	Mixer Grid Shunt
R15	1000Ω	½		BTS-1000	Mixer Decoupling
R16	150Ω	½			Decoupling
R17	4700Ω	½			Osc. Plate
R18	47Ω	½			Osc. Cathode
R19	100KΩ	½			Osc. Grid
R20	100KΩ	½			Osc. Grid
R21	10KΩ	½	PP23108		1st Video IF Grid
R22	82Ω	½	PP23148		1st Video IF Cathode
R23	100Ω	½	PP23109		1st Video IF Decoupling
R24	330Ω	½	PP23110		AGC Network
R25	8200Ω	½	PP23111		2nd Video IF Grid
R26	82Ω	½	PP23148		2nd Video IF Cathode
R27	100Ω	½	PP23109		2nd Video IF Decoupling
R28	1 Meg.	½	PP23112		AGC Network
R29	8200Ω	½	PP23111		3rd Video IF Grid Coil Shunt
R30	100Ω	½	PP23109		3rd Video IF Cathode
R31	100Ω	½	PP23109		3rd Video IF Decoupling
R32	680KΩ	½	PP23113	BTS-680K	AGC Diode Load
R33	39KΩ	1	PP23107	BTA-39K	Voltage Divider
R34	8200Ω	½	PP23111	BTS-8200	Video Det. Diode Load
R35	1000Ω	½	PP23114	BTS-1000	Bias Network
R36	12Ω	½	PP23115		Parasitic Supp.
R37	10KΩ	7	PP23101	AB-10K	Video Amp. Plate (Wire Wound)
R38	6800Ω 20%	1	PP23117	BT-1-6800	Video Amp. Plate
R39	47KΩ	2	PP23116	BT-2-47K	Filter
R40	47KΩ	2	PP23116	BT-2-47K	Filter
R41	22KΩ	2	PP23100	BT-2-22K	Bleeder
R42	2200Ω	½	PP23128	BTS-2200	Picture Tube Grid
R43	270KΩ	½	PP23129	BTS-270K	DC Rest. Load
R44	47KΩ	½	PP23131	BTS-47K	DC Rest. Load
R45	820KΩ	½	PP23130	BTS-820K	Voltage Divider
R46	1 Meg.	½	PP23112	BTS-1 Meg.	Sync. Sep. Grid
R47	3900Ω	½	PP23132	BTS-3900	Sync. Sep. Cathode
R48	3900Ω	½	PP23132	BTS-3900	Sync. Sep. Plate
R49	3900Ω	½	PP23132	BTS-3900	Sync. Sep. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R50	27KΩ	½	PP23126	BTS-27K	Voltage Divider
R51	220KΩ	½	PP23127	BTS-220K	Voltage Divider
R52	470KΩ	½	PP23118	BTS-470K	Sound IF Grid
R53	1000Ω	½	PP23114	BTS-1000	Sound IF Plate Decoupling
R54	100KΩ	½	PP23120	BTS-100K	Sound IF Screen
R55	12KΩ	½	PP23119	BTS-12K	Voltage Divider
R56	15KΩ	½	PP23121	BTS-15K	De-emphasis
R57	47KΩ	½	PP23147	BTS-47K	Ratio Det. Diode Load
R58	10 Meg.	½	PP23123	BTS-10 Meg.	AF Grid
R59	330KΩ	1	PP23124	BTA-330K	AF Plate
R60	470KΩ	½	PP23118	BTS-470K	Output Grid
R61	220Ω	1	PP23125	BW-1-220	Output Cathode
R62	100Ω	2	PP23109	BW-½-100	Focus Coil Shunt
R63	1500Ω	7	PP2101	AB-1500	Series Focus Coil
R64	22KΩ	½	PP23122	BTS-22K	Integrator
R65	820Ω	½	PP23111	BTS-8200	Integrator
R66	820Ω	½	PP23111	BTS-8200	Integrator
R67	1 Meg.	½	PP23112	BTS-1 Meg.	Vert. Osc. Grid See Note 1
R68	1 Meg.	½	PP23112	BTS-1 Meg.	Vert. Osc. Grid See Note 2
R69	100KΩ	½	PP23120	BTS-100K	Voltage Divider
R70	6.8 Meg.	½	PP23150	BTS-6.8 Meg.	Voltage Divider
R71	1.5 Meg.	½	PP23135	BTS-1.5 Meg.	Vert. Osc. Plate See Note 3
R72	2.2 Meg.	½	PP23134	BTS-2.2 Meg.	Vert. Amp. Grid
R73	560Ω	½	PP23137	BTS-560	Vert. Amp. Cathode
R74	3300Ω	½	PP23136	BTS-3300	Vert. Peaking
R75	6800Ω 20%	2	PP23133	BT-2-6800	Filter
R76	56KΩ	½	PP23146	BTS-56K	Filter
R77	33KΩ	½	PP23138	BTS-33K	Feedback Network
R78	470Ω	½	PP23139	BTS-4700	Feedback Network
R79	220Ω	½	PP23128	BTS-2200	Feedback Network
R80	100KΩ	½	PP23120	BTS-100K	Horiz. Phase Det. Load
R81	100KΩ	½	PP23120	BTS-100K	Horiz. Phase Det. Load
R82	4.7 Meg.	½	PP23140	BTS-4.7 Meg.	Horiz. Phase Det. Load
R83	470KΩ	½	PP23118	BTS-470K	Horiz. AFC Filter Network
R84	560Ω	1	PP23105	BTA-5600	Horiz. Osc. Plate
R85	1500Ω	½	PP23141	BTS-1500	Horiz. Osc. Cathode
R86	100KΩ	½	PP23120	BTS-100K	Horiz. Osc. Grid
R87	270KΩ	½	PP23129	BTS-270K	Horiz. Osc. Plate Decoupling
R88	22KΩ	2	PP23100	BT-2-22K	Filter
R89	6Ω	½	PP23142		Parasitic Supp.
R90	1 Meg.	½	PP23112	BTS-1 Meg.	Horiz. Output Grid
R91	82Ω	1	PP23143	BW-1-82	Horiz. Output Cathode
R92	8200Ω 5%	2	PP23106	BT-2-8200-5%	Horiz. Output Screen
R93	10KΩ	20	PA21100		Damper Filter Tapped @ 7500Ω, Wire Wound
R94	3.3Ω	1	PP23144		HV Filament Wire Wound
R95	1 Meg.	½	PP23145		HV Filter
R96	10Ω	1	PP23104	BW-1-10	Bias Network Wire Wound
R97	100Ω	4	PP21102	AB-1000	Filter Wire Wound
R98	15Ω	2	PP233-2228		Surge Limiter Wire Wound

Note 1. Some models use 1.2 Meg resistor in this application.
Note 2. Not used in all models.
Note 3. Some models use 1 Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	780VCT @ 1.75A, 195ADC 350VCT .040ADC	5VAC @ 3A	6.3VAC @ 9.1A	RC1098	P-8157 ††		

†† Add series resistor to drop voltage to the 40MA DC circuit.

TRANSFORMER (SWEEP CIRCUITS)

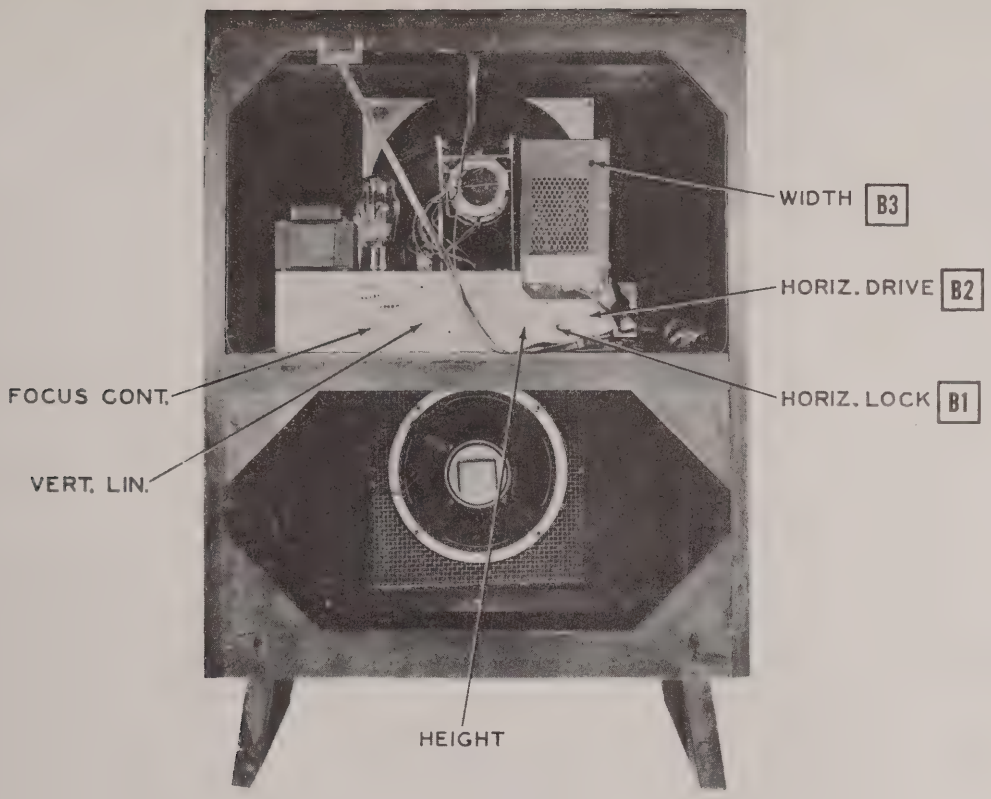
ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	10Ω		PA28263				Hor. AFC Coil
T3	17Ω	15Ω SEC. 1	PB1097	A-8111††	A-3000††	T80-1††	Vert. Block Osc.Trans
T4	320Ω	SEC. 1	PC10100	A-8117		T9B-1	Hor. Output Trans.
	Tap @ 105Ω	11Ω Tap @ .5Ω					
		SEC. 2 70Ω					
T5	1200Ω	9.4Ω	PB1350	A-8112	A-3035##	TS0-4 ##	Vert. Output Trans.
T6A	14Ω		PP28261	DY-1			Hor.Deflection Coil
B	62Ω		PP28261				Vert.Deflection Coil
T7	90Ω		PP28260				Focus Coil

Drill new mounting holes.
†† Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T8	4200Ω	3.5Ω	400Ω	.72	PB1353	A-3877††	A-3026	RO-8††	†† Drill one new mounting hole.

AIR KING MODELS
A1001A, A2000, A2001, A2002, A2010



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type knobs from controls.
2. Remove 10 screws holding rear cover. Remove cover.
3. Remove speaker plug from top left side of TV chassis.
4. Disconnect two antenna plugs.
5. Remove four 7/16" hex head bolts holding TV chassis to cabinet. Remove TV chassis.
6. Remove four 11/32" hex nuts holding speaker to cabinet. Remove speaker.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

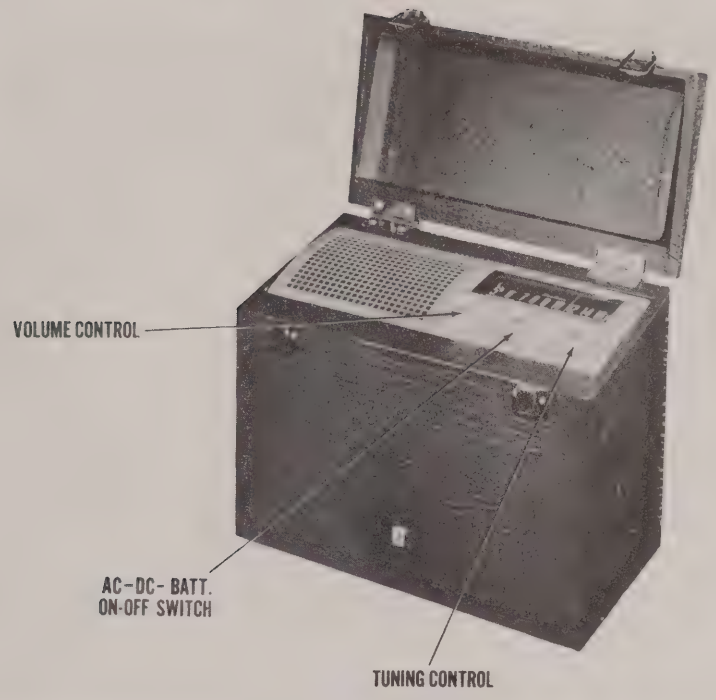
Turn the receiver on and tune in a test pattern. Turn vertical hold control to sync picture vertically.

Turn the horizontal hold control to the mid-position of its range. Adjust B1 until picture syncs normally in the horizontal plane.

Adjust B2 for the best compromise between brightness and horizontal linearity.

Adjust B3 so that picture fills the mask horizontally.

AIRLINE MODEL 94WG-1059A
(BATTERY-LINE OPERATED)



AIRLINE MODEL 94WG-1059A

TRADE NAME	Airline, Model 94WG-1059A
SUPPLIER	Montgomery Ward and Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1T4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING:	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form .16 Amp. @ 117 Volts AC or 40MA @ 9 Volts DC and 9MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.	.1MFD	High side to pin 6 (Grid) of 1T4 (V1). Low side to B-.	1620KC (400∿ Mod.)	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC (400∿ Mod.)	Tune for max. output	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set pointer to 1400KC on the dial.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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DATE 11/49 SET #75 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1U4	1U4	6AR	
V4	DET.-AVC-AF Amp.	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	45X356	AF886D4A†	UP7DJ63†		EL-434†	● Filter
B	30	150		PRS25/100	BR502		UHC-102	■ Filter
C	100	25						▲ Filament Bypass
D	40	25						Filament Bypass
C2	20		47X516	1468-000025	5W5Q2	NP0K-20	MB-42	Osc. Grid Cap.
C3	.05	200	B66503	P288-05	GT2S5		TM-15	Screen Bypass
C4	.05	200	B66503	P288-05	GT2S5		TM-15	Decoupling
C5	.05	200	B66503	P288-05	GT2S5		TM-15	AVC Filter
C6A	50		Note 1	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Filter
B	50		Note 1	1468-00005	5Q5Q5	GP1K-50	1FM-45	RF Filter
C7	.005	200	B66502	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C8	5000		47X507	1467-005	1D5D5	811-005	29C1	AF Screen Bypass
C9	47	500	47X463	1468-00005	5W5Q5	GP1K-50	1FM-45	AF Plate Bypass
C10	.05	200	B66503	P288-05	GT2S5		TM-15	RF Bypass
C11	.005	200	B66502	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C12	4700	500	47X491	1467-005	1D5D5	GP2M-005	1FM-25	Output Plate Bypass
C13	.05	200	B66503	P288-05	GT2S5		TM-15	Filament Bypass
C14	.05	200	B66503	P288-05	GT2S5		TM-15	Filament Bypass
C15	.08	200	B66803	P288-1	GT2P1		72P52	Line Isolation
C16	.05	400	D66503	P488-05	GT4S5		TM-15	Line Filter
C17	.01	400	B66103	P488-01	GT4S1	GP2-335-01	TM-11	IF Grid Filter Note 2

† Parallel sections to obtain desired capacity.
Note 1. Items C6A, C6B and R7 are combined into one unit obtainable under MFGR'S Part No. 76X1.
Note 2. Not used in all models.

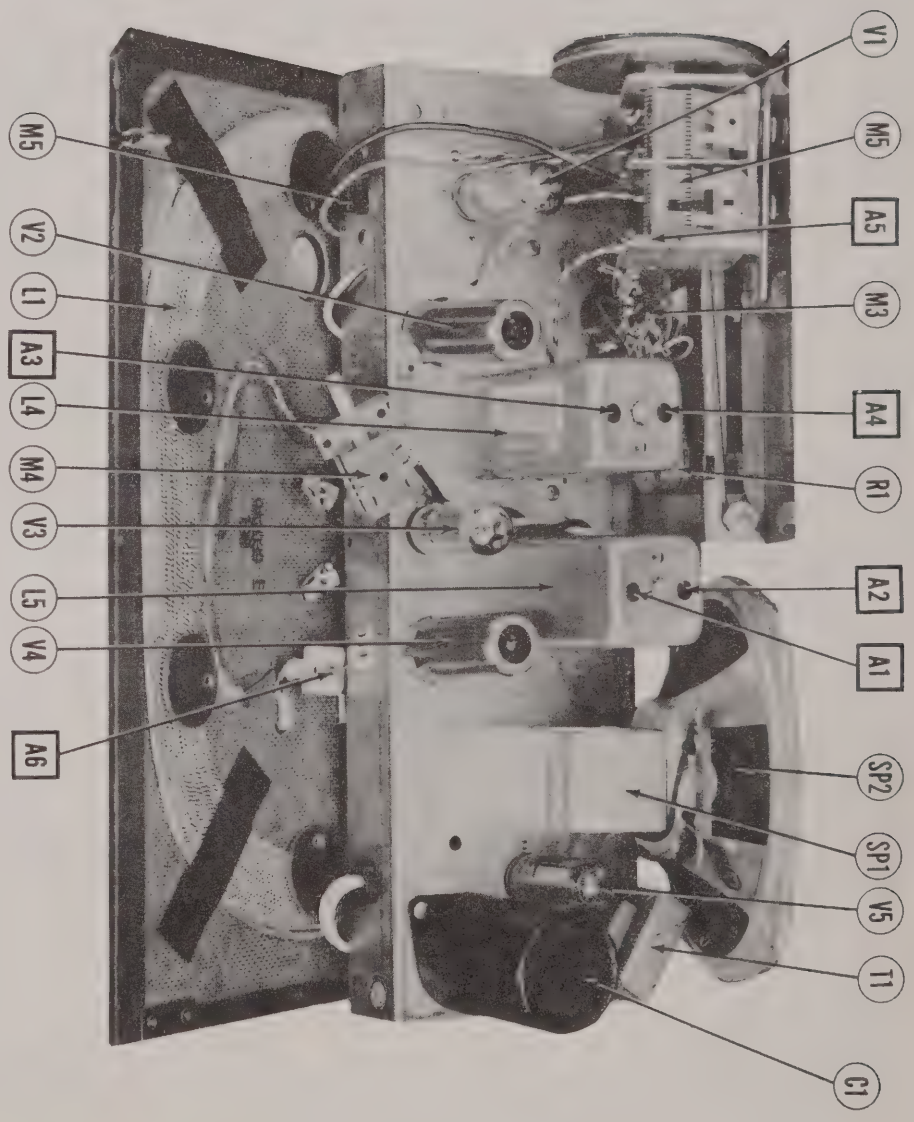
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X382	Q13-133	AM-60-Z	Volume control
B	Shaft			Not Req.	KSS-3	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	100KΩ	½	B84104	BTS-100K	Osc. Grid
R3	18KΩ	1	B84183	BTA-18K	Osc. Anode
R4	2200Ω	½	B84222	BTS-2200	Decoupling
R5	4.7 Meg.	½	B85474	BTS-4.7 Meg.	IF Grid See Note 2
R6	2.2 Meg.	½	B85225	BTS-2.2 Meg.	AVC Network
R7	47KΩ	½	Note 1	BTS-47K	Diode Filter
R8	10 Meg.	½	B85106	BTS-10 Meg.	AF Grid
R9	4.7 Meg.	½	B85474	BTS-4.7 Meg.	AF Screen
R10	1 Meg.	½	B84105	BTS-1 Meg.	AF Plate
R11	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Output Grid
R12	180Ω	½	B84181	BW-½-180	Filament String
R13	270Ω	½	B84271	BW-½-270	Filament String
R14	330Ω	½	B84330	BW-½-330	Filament String
R15	750Ω	½	B84751	BTS-820	Filament String
R16	1500Ω	½	B84152	BTS-1500	Filament String
R17	680Ω	½	B84681	BTS-680	Filament String
R18	820Ω	½	B84821	BTS-820	Filament String
R19	2300Ω	12	43X237		Filter Wire Wound
R20	1800Ω	½	B84182	BTS-1800	Filter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	
R21	82Ω	2	D84820	BW-2-82	Line Dropping See Note 3
R22	27Ω	½		BW-½-27	Bias Network See Note 4

Note 1. Items C6A, C6B and R7 are combined into one unit, obtainable under MFGR'S Part No. 76X1
Note 2. Not used in all models.
Note 3. Some models use two resistors in parallel to obtain desired resistance.
Note 4. Some models use 33Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	10KΩ	3.5Ω	720Ω	.6Ω	51X143	A-3329	A-2932 ‡	RO-11	‡ Drill new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-803		
SP1	PM	3.5Ω	12A492	MOD.P525-V	52A1	
	CONE DIA.	V. C. DIA.				
SP2	5 1/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.
L1	Loop Ant.	.5Ω	1.9Ω	9A2039	
L2	RF Coil	5.5Ω	6.5Ω	9A1989	
L3	Osc. Coil	3.5Ω	9Ω	9A1990	
L4	Input IF	14Ω	12Ω	9A1991	
L5	Output IF	12Ω	14Ω	9A1992	

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V "A" 90V "B"	62-35			754			G6M60	

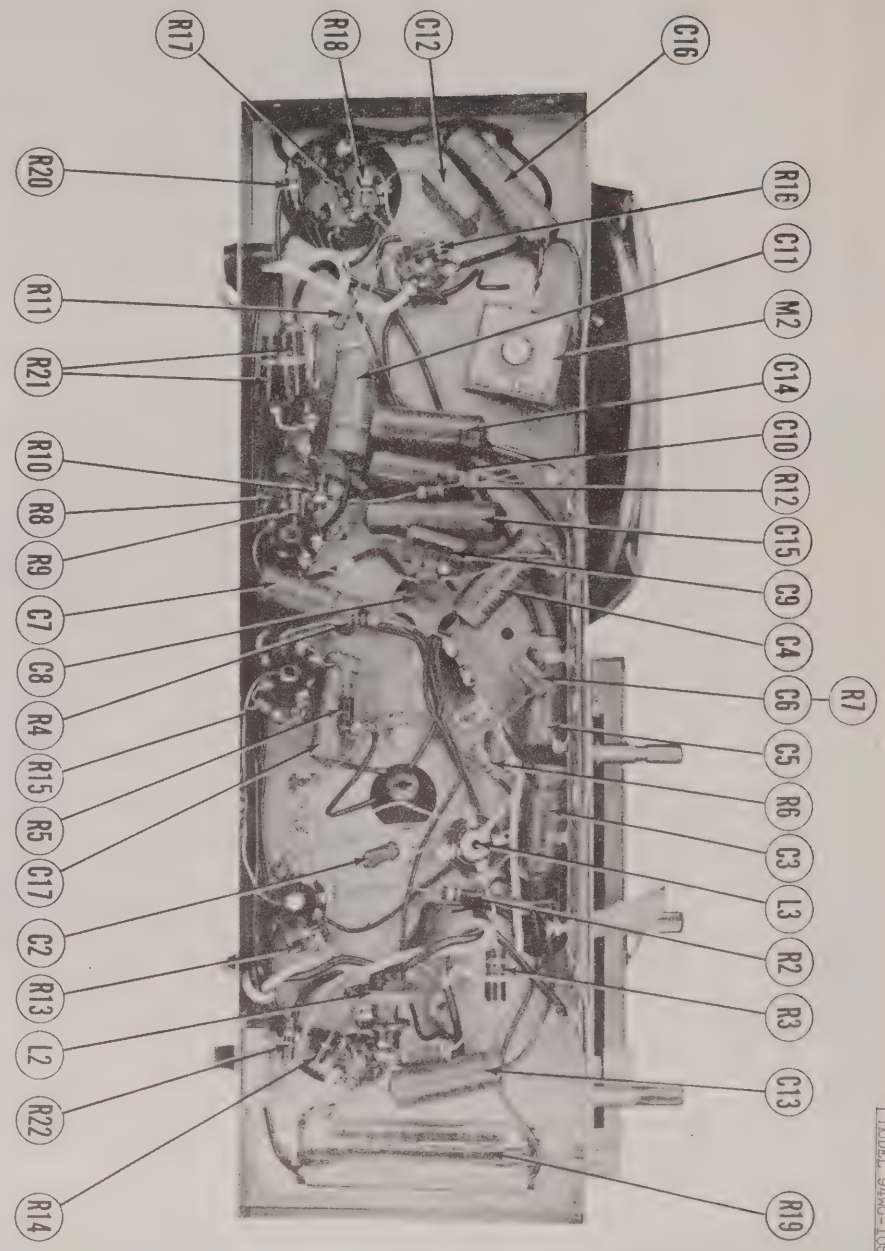
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AIRLINE PART No.	SYLVANIA PART NO.		
M2	.060A	66X7	NB-5		

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Switch	2A390	AC/DC-Battery
M4	Switch	2A389	On-Off
M5	Switch	2A175	Battery Saver
M6	3 Gang. Var. Cap.	14A205	(15-489MMF, 10-226MMF, 8-100MMF)
	Dial Scale	58X722	
	Dial Pointer	1?X46	
	Knob	10A733	Switch
	Knob	10A732	Tuning, Volume

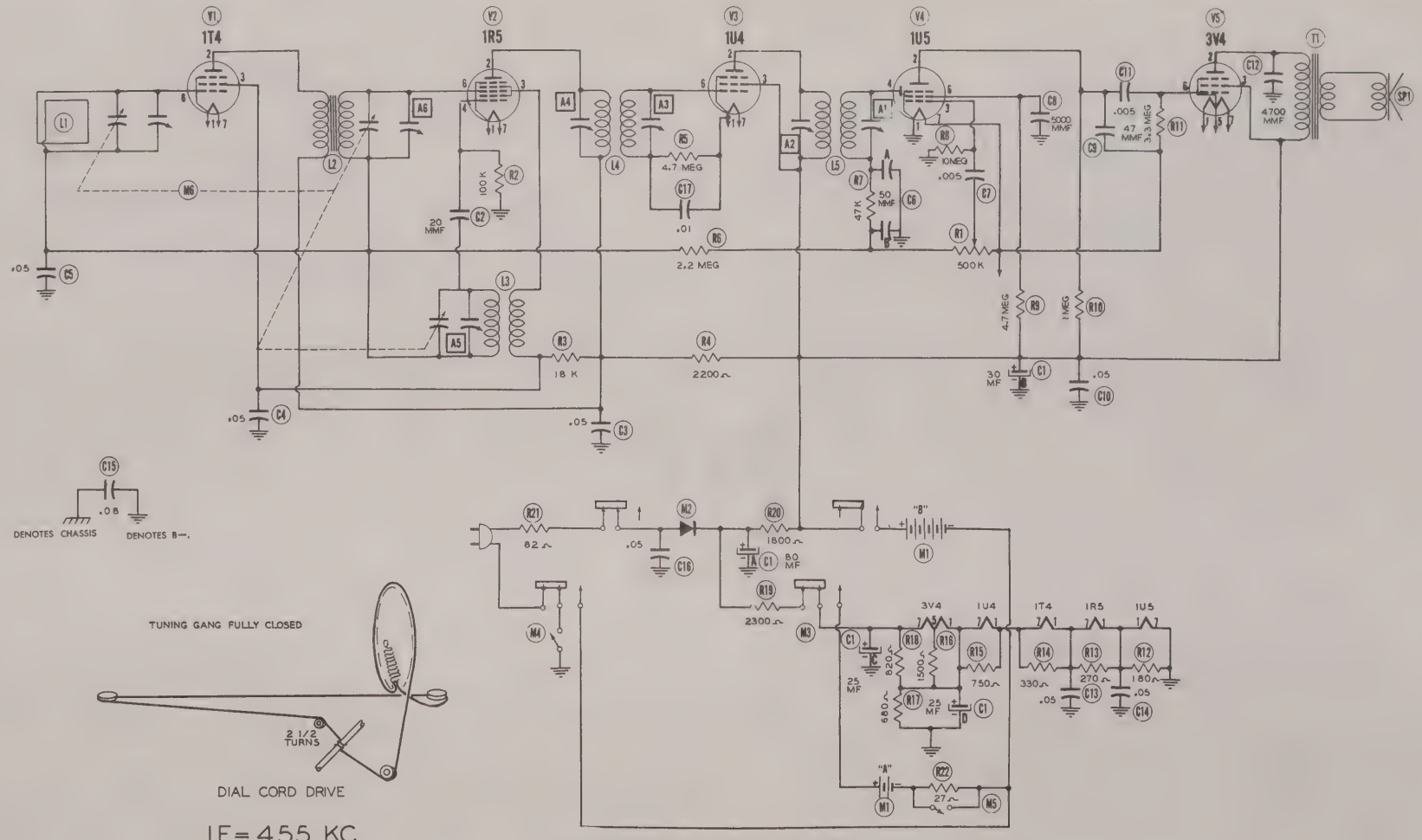
CHASSIS—BOTTOM VIEW



DATE 11/49 SET #75 FOLDER 3

AIRLINE MODEL 94WG-1059A

AIRLINE MODEL 94WG-1059A



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	2.8VDC	85VDC	42VDC	0V	2.6VDC	0V	4.4VDC
V 2	1R5	1.3VDC	85VDC	45VDC	-1VDC	1.3VDC	.1VDC	2.8VDC
V 3	1U4	4.4VDC	90VDC	90VDC	1.3VDC	4.4VDC	.1VDC	6VLC
V 4	1U5	1.3VDC	1.3VDC	14VDC	.4VDC	0V	-.1VDC	0V
V 5	3V4	6VDC	85VDC	90VDC	0V	7.8VDC	0V	9.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†4KΩ	†23KΩ	Inf.	*	*	*
V 2	1R5	*	†4KΩ	†23KΩ	100KΩ	*	3 Meg.	*
V 3	1U4	*	†1.8KΩ	†1.8KΩ	*	*	3 Meg.	*
V 4	1U5	*	†1 Meg.	†4.7Meg	500KΩ	Inf.	10 Meg.	*
V 5	3V4	*	†2.5KΩ	†1.6KΩ	0Ω	*	3.3Meg.	*

† Measured from output of M2

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BELL SOUND
MODEL B-23

BELL SOUND
MODEL B-23

BELL SOUND MODEL B-23

TRADE NAME	Bell Sound, Model B-23
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 3, Ohio
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES(SEVEN)	Types 7B4 Mic. 1 Pre Amp., 7B4 Mic. 2 Pre Amp., 6SF5 AF Amp., 6SN7GT AF-Phase Inv., (2) 6L6G Power Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING: 1.03 Amp. @ 117 Volts AC

INPUTS

THIS AMPLIFIER HAS ONE PHONO AND TWO MICROPHONE INPUTS AND IS DESIGNED FOR ANY HIGH IMPEDANCE MICROPHONE OR PHONO PICKUP. SHIELDED CABLE ONLY SHOULD BE CONNECTED TO THE INPUT CIRCUITS REGARDLESS OF LENGTH. THIS CABLE SHOULD PREFERABLY BE SINGLE CONDUCTOR SHIELDED MICROPHONE CABLE OF GOOD QUALITY WITH OUTER PLASTIC JACKET. ALL THREE CHANNELS MAY BE INTER-MIXED SIMULTANEOUSLY IF SO DESIRED.

OUTPUT CONNECTIONS

SPEAKERS ARE CONNECTED BY MEANS OF 4 PRONG PLUGS USING TERMINALS 2 AND 3 TO THE SPEAKER SOCKETS ON REAR FLANGE OF CHASSIS. EITHER SOCKET MAY BE USED IF ONLY ONE SPEAKER IS TO BE CONNECTED. VARIABLE IMPEDANCE FOR SPEAKER MATCHING IS ACCOMPLISHED BY MEANS OF THE IMPEDANCE MATCHING PIN AND PLUG. INSERT PIN IN PROPER HOLE IN SOCKET CORRESPONDING TO THE NEAREST IMPEDANCE OF SPEAKER OR SPEAKERS.

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PARTS LIST AND DESCRIPTIONS

BELL SOUND MODEL B-23

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELL SOUND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. #1 Pre Amp.	7B4	7B4	5AC	
V2	Mic. #2 Pre Amp.	7B4	7B4	5AC	
V3	AF Amp.	6SF5	6SF5	6AB	
V4	AF Amp.-Phase Inverter	6SN7GT	6SN7GT	8BD	
V5	Power Output	6L6G	6L6G	7AC	
V6	Power Output	6L6G	6L6G	7AC	
V7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	450		AF8J	UP4045		EL-4	Filter
C2	20	450		PRS450/20	BR2045		UT-20	Filter
C3	20	450		PRS450/20	BR2045		UT-20	Decoupling
C4	50	25		PRS25/50	BR502		TVA-7	Output Cath. Bypass Note 1
C5	10	25		PRS25/10	BR102A		TVA-5	AF-Phase Inv. Cath. Bypass
C6	10	25		PRS25/10	BR102A		TVA-5	AF Cath. Bypass
C7	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C8	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C9	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C10	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C11	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Tone Compensation
C12	.02	400		P488-02	GT4S2		TM-12	Audio Coupling
C13	300	500		1468-0003	5W5T3	GP2K-300	1FM-335	AF Amp. Grid Bypass Note 2
C14	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C15	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C16	.05	600		P688-05	GT6S5		TM-15	Line Filter Note 2

Note 1. Some models use 25MFD in this application.
Note 2. Not used in all models.

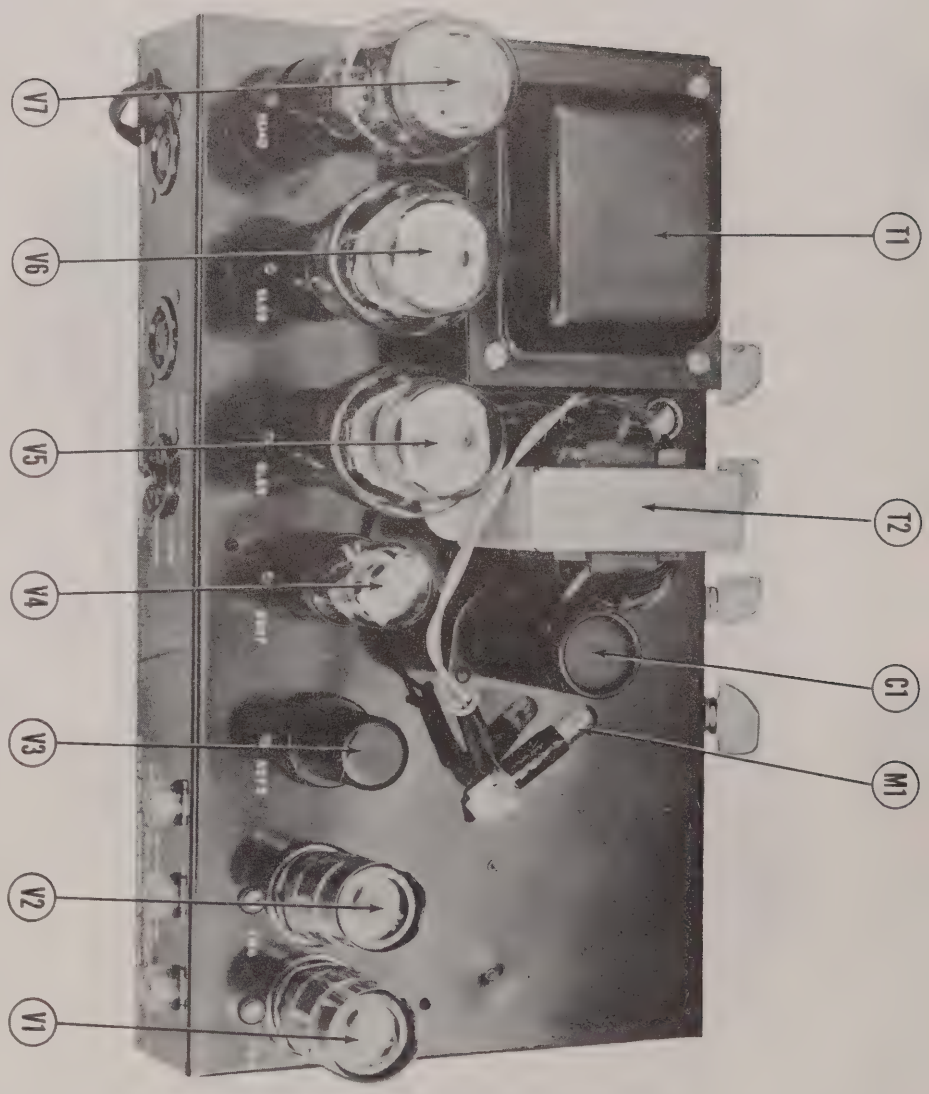
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½		Q13-137	M-63-Z	Microphone 1 volume control
R2	1 Meg.	½		Q13-137	M-63-Z	Microphone 2 volume control
R3	500KΩ	½		Q13-133	M-60-Z	Phono volume control
R4A	500KΩ	½		Q13-133	M-60-Z	Tone control
S	Switch			76-1	SW-A	Attach to R4A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELL SOUND PART No.	IRC PART No.	IDENTIFICATION CODES
R5	10 Meg.	½		BTS-10 Meg.	Mic. 1 Pre Amp. Grid
R6	270KΩ	½		BTS-270K	Mic. 1 Pre Amp. Plate
R7	10 Meg.	½		BTS-10 Meg.	Mic. 2 Pre Amp. Grid
R8	270KΩ	½		BTS-270K	Mic. 2 Pre Amp. Plate
R9	270KΩ	½		BTS-270K	Tone Compensation
R10	270KΩ	½		BTS-270K	Tone Compensation
R11	270KΩ	½		BTS-270K	Tone Compensation
R12	100KΩ	½		BTS-100K	AF Grid
R13	5000Ω	½		BTS-4700	AF Cathode
R14	47Ω	½		BW-½-47	Feedback Network
R15	270KΩ	½		BTS-270K	AF Plate
R16	100KΩ	½		BTS-100K	Feedback Network
R17	100KΩ	½		BTS-100K	AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
R18	2700Ω	½		BTS-2700	AF Cathode
R19	100KΩ	½		BTS-100K	AF Plate
R20	22KΩ	½		BTS-22K	Phase Inv. Grid
R21	100KΩ	½		BTS-100K	Phase Inv. Plate
R22	270KΩ	½		BTS-270K	Output Grid
R23	270KΩ	½		BTS-270K	Output Grid
R24	200Ω	10		AB-200	Output Cathode Wire Wound
R25	25KΩ	10		AB-25K	Filter Wire Wound
R26	6000Ω	10		AB-6000	Filter Wire Wound
R27	100KΩ	1		BTA-100K	Decoupling See Note

Note. Some models use two resistors in parallel for required resistance and wattage.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.03A	720VCT @ .122 ADC	5VAC @ 3A	6.3VAC @ 3.6A	B-20059	P-6314	P-2955 †	PH-120B

† Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8000Ω CT	2.5Ω 4Ω 8Ω 16Ω 250Ω 500Ω	215Ω CT	.4Ω .5Ω .6Ω .8Ω 10.4Ω 16Ω	B-20056	A-3304‡	A-3028		‡ Drill new mounting holes

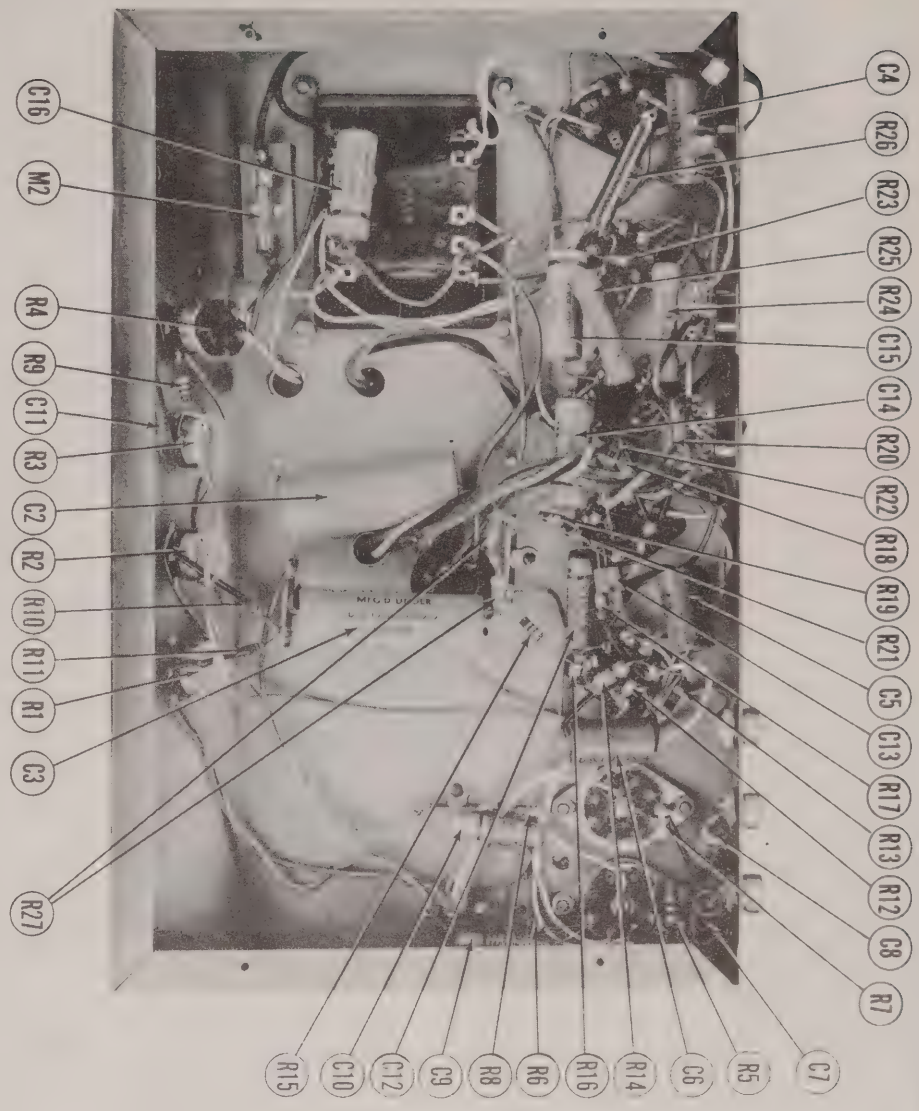
DIAL LIGHTS

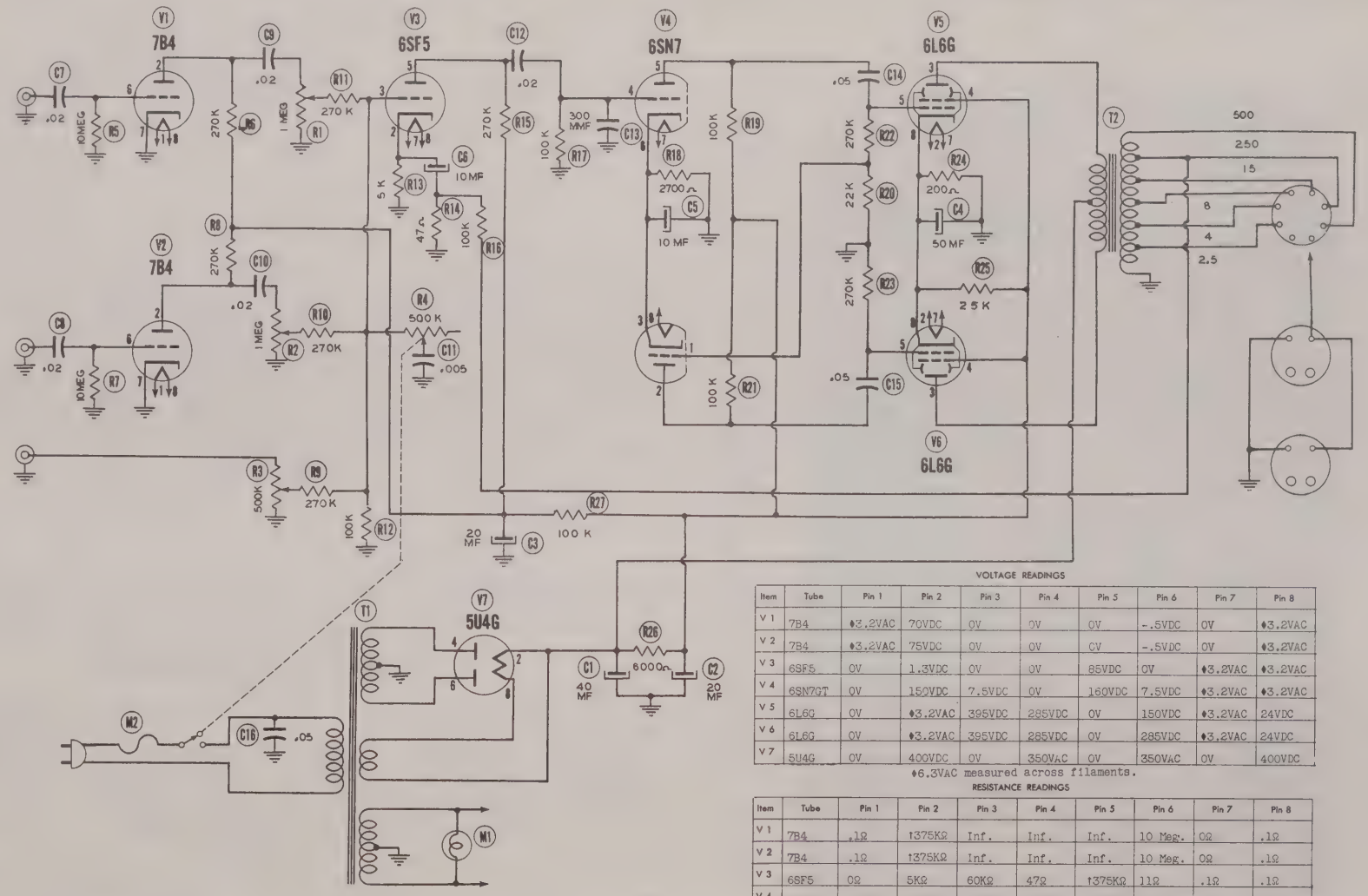
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BELL SOUND PART No.		
M1	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	BLUE SOUND PART No.	NOTES
M2	Fuse		2 Amp.

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B4	♦3.2VAC	70VDC	0V	0V	0V	-.5VDC	0V	♦3.2VAC
V 2	7B4	♦3.2VAC	75VDC	0V	0V	0V	-.5VDC	0V	♦3.2VAC
V 3	6SF5	0V	1.3VDC	0V	0V	85VDC	0V	♦3.2VAC	♦3.2VAC
V 4	6SN7GT	0V	150VDC	7.5VDC	0V	160VDC	7.5VDC	♦3.2VAC	♦3.2VAC
V 5	6L6G	0V	♦3.2VAC	395VDC	285VDC	0V	150VDC	♦3.2VAC	24VDC
V 6	6L6G	0V	♦3.2VAC	395VDC	285VDC	0V	285VDC	♦3.2VAC	24VDC
V 7	5U4G	0V	400VDC	0V	350VAC	0V	350VAC	0V	400VDC

♦6.3VAC measured across filaments.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B4	.1Ω	†375KΩ	Inf.	Inf.	Inf.	10 Meg.	0Ω	.1Ω
V 2	7B4	.1Ω	†375KΩ	Inf.	Inf.	Inf.	10 Meg.	0Ω	.1Ω
V 3	6SF5	0Ω	5KΩ	60KΩ	47Ω	†375KΩ	11Ω	.1Ω	.1Ω
V 4	6SN7GT	22KΩ	†100KΩ	2.7KΩ	100KΩ	†10CKΩ	2.7KΩ	.1Ω	.1Ω
V 5	6L6G	0Ω	.1Ω	†100Ω	†6KΩ	300KΩ	100KΩ	.1Ω	200Ω
V 6	6L6G	0Ω	.1Ω	†11Ω	†6KΩ	270KΩ	†6KΩ	.1Ω	200Ω
V 7	5U4G	Inf.	30KΩ	Inf.	115Ω	Inf.	110Ω	0Ω	30KΩ

† Measured from pin 8 of V7.

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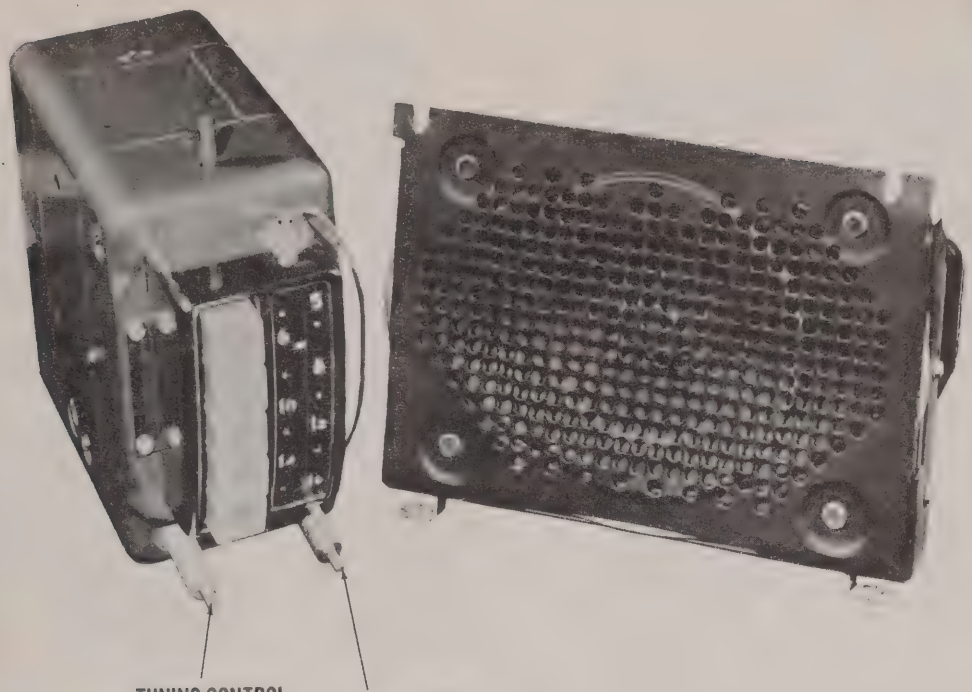
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



CHEVROLET
MODEL 986240

CHEVROLET
MODEL 986240

CHEVROLET MODEL 986240

TRADE NAME	Chevrolet, Model 986240
MANUFACTURER	Chevrolet Motor Div., General Motors Corp., Detroit 2, Michigan
TYPE SET	Battery Operated Custom-Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AV6 DET-AVC-AF, 6V6GT Power Output, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING: 8.2 Amp. @ 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The 68MMF capacitor used as a dummy antenna is a critical value. The use of any other size capacitor will result in inaccurate alignment.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Before beginning step 2 set the oscillator (center) slug, so rear of slug is 1 25/32" from the mounting end of the coil. This setting is made with the dial set against the high frequency stop.

With the receiver set to receive a 1000KC signal from the signal generator, the pointer adjustment screw should be set so the pointer is exactly 3/16" below the 1000KC calibration on the dial. This screw is located on the connecting link between the core guide bar and the pointer assembly. It should be adjusted while looking directly at the dial. This adjustment sets the correct relationship between the pointer and the dial when the set is installed in the car.

The antenna trimmer A7 should be retuned for maximum after the set is installed. For this adjustment use a weak station near 1400KC.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 V2. Low side to chassis.	260KC (400~ Mod.)	550KC	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.	68MMF	High side to antenna connector Low side to chassis.	1615KC (400~ Mod.)	Against high frequency stop.	"	A5	"
3.	68MMF	"	"	"	"	A6,A7	"
4.	68MMF	"	1400KC	Tune for max. output	"	A8,A9	Adjust for maximum output. Repeat step 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CHEVROLET PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	DET.-AVC-AF	6AV6	6AV6	7BT	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CHEVROLET PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	M908	AFH44I4A	UP2245C		EL-322	■ Filter
B	20	400						▲ Filter
C	20	25						Output Cathode Bypass
C2	.05	400	E503	P488-05	GT4S5		TM-15	Screen Bypass
C3	.05	200	E503	P288-05	GT2S5		TM-15	AVC Filter
C4	10		G100	1468-00001	5W5Q1	GP1K-10	MS-41	RF Coupling
C5	39	500	G390	1469-00004	5R5Q4	GP1K-39	MS-44	Fixed Trimmer
C6	300		7258162	1469-0003	5R5T3	GP2K-300	MS-33	Fixed Trimmer
C7	5000		E502	1467-005	1D5D5	811-005	29C1	Audio Coupling Note
C8	.001	600	E102	P688-001	GT6D1	GP2M-001	TM-21	Audio Coupling
C9	.03	400	E303	P488-03	GT4S3		TM-13	Audio Coupling
C10	750		1218372	1468-00075	1W5T7	GP2K-750	1FM-37	Tone Compensation
C11	5000		1218298	1467-005	1D5D5	811-005	29C1	Tone Compensation
C12	220	500	G221	1468-00025	5W5T25	GP2K-220	1FM-325	Output Grid Bypass
C13	.004	800	H402	P1088-004	GT16D4		MB-24	Output Plate Bypass
C14	.006	1600	H602	P1688-006	GT16D6		MB-26	Buffer
C15	.5	120	E504	P288-5	GT2P5		68P25	RF Bypass

Note. Items C7 and R12 are combined into one unit, obtainable under MFGR'S Part No. 1218258.

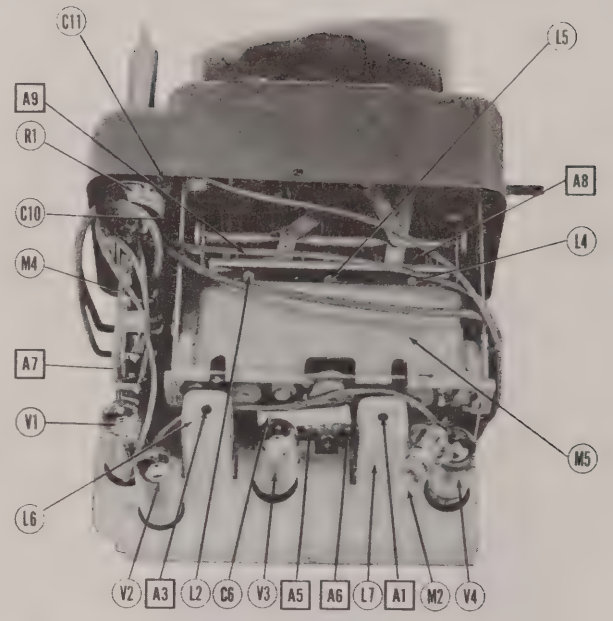
CONTROLS

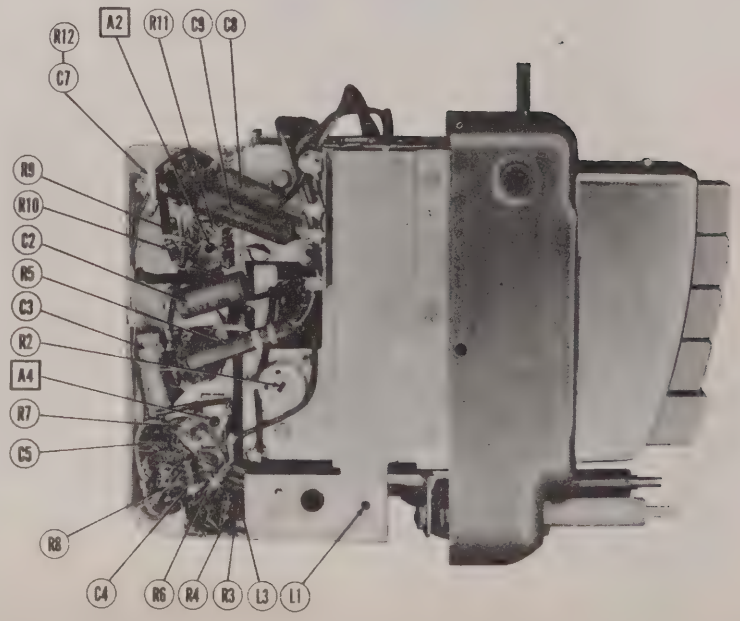
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHEVROLET PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	350KΩ	½	7258084			Volume control and switch
B	Switch					Tone switch (Dual Concentric)
R2	2000Ω	½	7242204			Sensitivity control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHEVROLET PART No.	IRC PART No.	IDENTIFICATION CODES
R3	2.2 Meg.	½	A225	BTS-2.2 Meg.	RF Grid
R4	68Ω	½	A680	BW-½-68	RF Cathode
R5	15KΩ	2	C153	BT-2-15K	Screen Dropping
R6	15KΩ	1	B153	BTA-15K	RF Plate
R7	330KΩ	½	A334	BTS-330K	AVC Network
R8	22KΩ	½	A223	BTS-22K	Osc. Grid
R9	1 Meg.	½	A105	BTS-1 Meg.	AVC Network
R10	220KΩ	½	A224	BTS-220K	AF Plate
R11	560KΩ	½	A564	BTS-560K	Diode Filter
R12	6.8 Meg.	½	A685	BTS-6.8 Meg.	AF Grid Note
R13	220KΩ	½	A224	BTS-220K	Output Grid
R14	390Ω	1	B391	BW-1-390	Output Cathode
R15	1800Ω	2	*	BW-2-1800	Filter Wire Wound
R16	220Ω	1	B221	BW-1-220	Hash Suppression

* Replace with MFGR'S Part No. C272 and B562 in parallel.
Note. Items C7 and R12 are combined into one unit, obtainable under MFGRS Part No. 1218258.





PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC @ 8.2A	570VCT .057ADC			7255881	P-4065	P-4076	VT-5

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5300Ω	4.4Ω	400Ω	.4Ω	7256009	A-3849 †	A-2902 †	RO-301 †	† Bend mounting tabs down. Drill or file chassis to fit.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CHEVROLET PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	4.3Ω	4.4Ω	7241312	ST-813 MOD.F69-U	69EV6	
	CONE DIA.	V. C. DIA.				
SP2	9" x 6"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CHEVROLET PART No.	MEISSNER PART No.
L1	Ant. Loading	7Ω		7258502	
L2	Ant. Coil	11.5Ω		7257979	
L3	Ant. Spark Choke	5.5Ω		7240251	
L4	RF Coil	11.5Ω		7257979	
L5	Osc. Coil	1Ω	4Ω	7257977	
L6	Input IF	34Ω	32Ω	1218725	16-6668
L7	Output IF	32Ω	34Ω	1218726	16-6670
L8	Hash Choke	.1Ω		7241708	

VIBRATOR

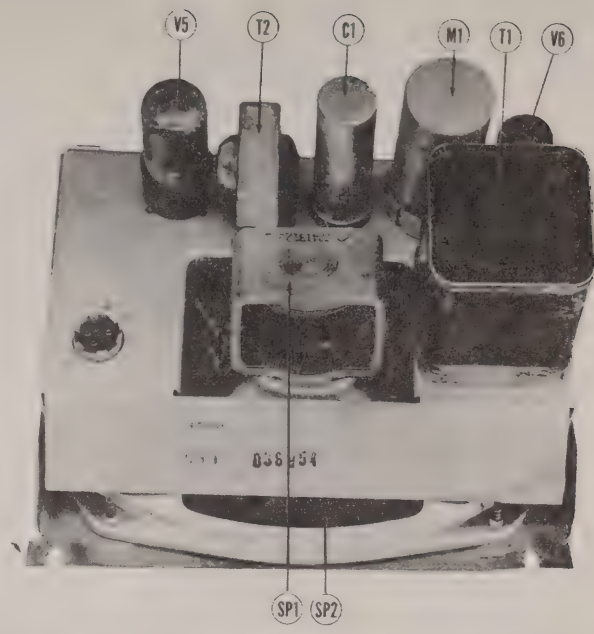
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				CHEVROLET PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6V	115∿	7239124	C-00	5300	

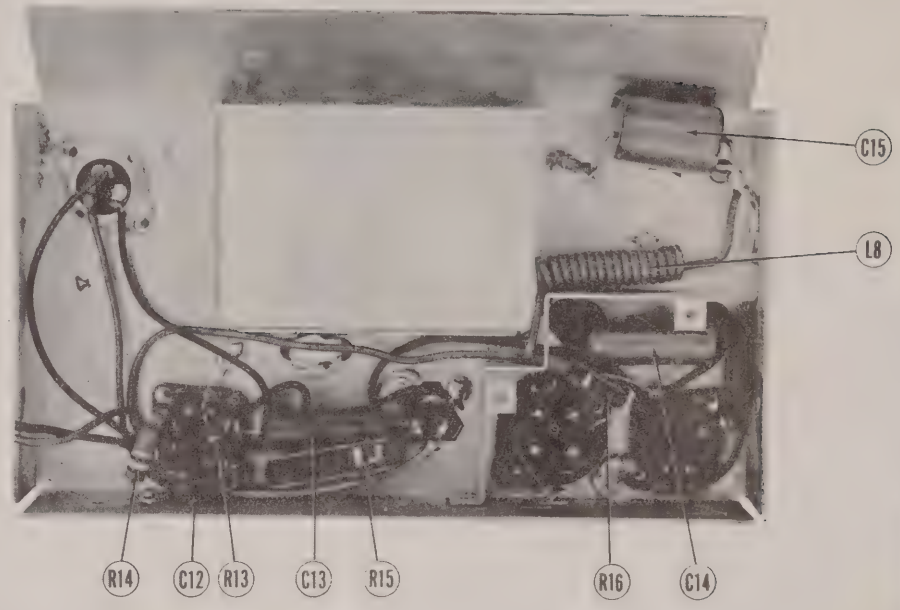
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CHEVROLET PART No.		
M2	Bayonet	6-8	.4	White	55		Type #55

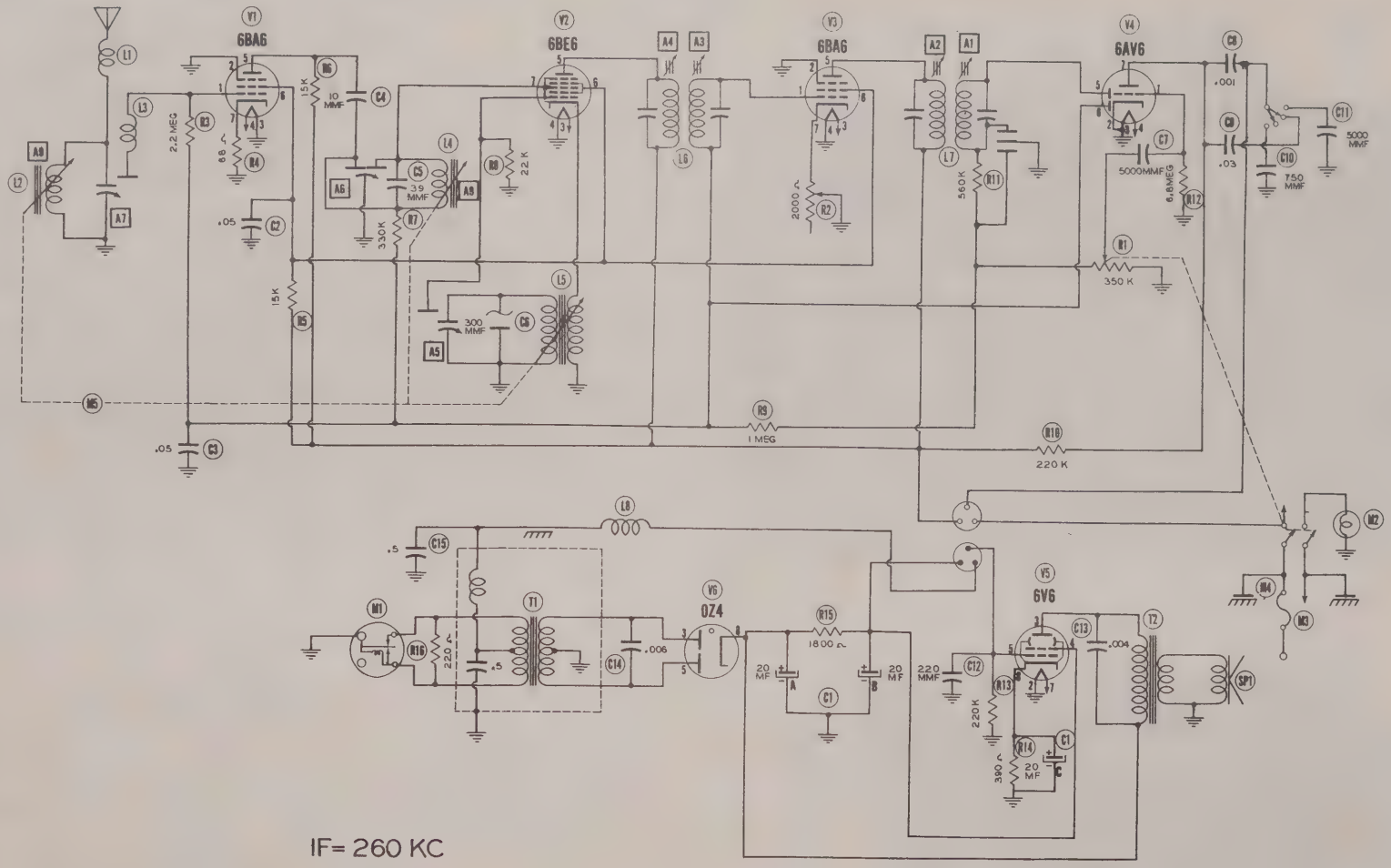
MISCELLANEOUS

ITEM No.	PART NAME	CHEVROLET PART No.	NOTES
M3	Fuse		
M4	Spark Plate	7258332	
M5	Tuning Assembly		
A5	Dual Trimmer	7242454	Osc. Adj., RF Adj.
A6	Trimmer	7258000	Ant. Adj.
A7	Dial	7258002	
	Pointer Assembly	7258059	





CHEVROLET MODEL 986240



IF= 260 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	-.1VDC	0V	0V	6.3VDC	220VDC	75VDC	.3VDC	
V 2	6BE6	$-7.6VDC	0V	6.3VDC	0V	250VDC	75VDC	-.5VDC	
V 3	6BA6	-.6VDC	0V	6.3VDC	0V	250VDC	75VDC	1.6VDC	
V 4	6AV6	-.6VDC	0V	0V	6.3VDC	-.5VDC	-.7VDC	100VDC	
V 5	6V6GT	0V	0V	265VDC	250VDC	0V	0V	6.3VDC	15VDC
V 6	0Z4	0V	0V	265VAC	0V	265VAC	0V	0V	280VDC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.5Meg.	0Ω	0Ω	.1Ω	†17KΩ	†17KΩ	68Ω	
V 2	6BE6	22KΩ	3.5Ω	.1Ω	0Ω	†1.8KΩ	†17KΩ	1.7Meg.	
V 3	6BA6	1.3Meg.	0Ω	.1Ω	0Ω	†1.8KΩ	†17KΩ	300Ω	
V 4	6AV6	6.8Meg.	0Ω	0Ω	.1Ω	900KΩ	1.5Meg.	†220KΩ	
V 5	6V6GT	Inf.	0Ω	1380Ω	†1.8KΩ	220KΩ	0Ω	.1Ω	390Ω
V 6	0Z4	0Ω	Inf.	320Ω	Inf.	300Ω	Inf.	Inf.	200KΩ

† Measured from pin 8 of V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CORONADO MODELS
94RA1-43-8510B 94RA1-43-8511B

MODEL
94RA1-43-8511B

MODEL
94RA1-43-8510B

CORONADO MODELS
94RA1-43-8510B 94RA1-43-8511B

CORONADO MODEL 94RA1-43-8510B

TRADE NAME	Coronado, Models 94RA1-43-8510B, 94RA1-43-8511B
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th St., Minneapolis, Minnesota
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(SEVEN)	Types 6BA7 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6AV6 DET-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING: .33 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC — FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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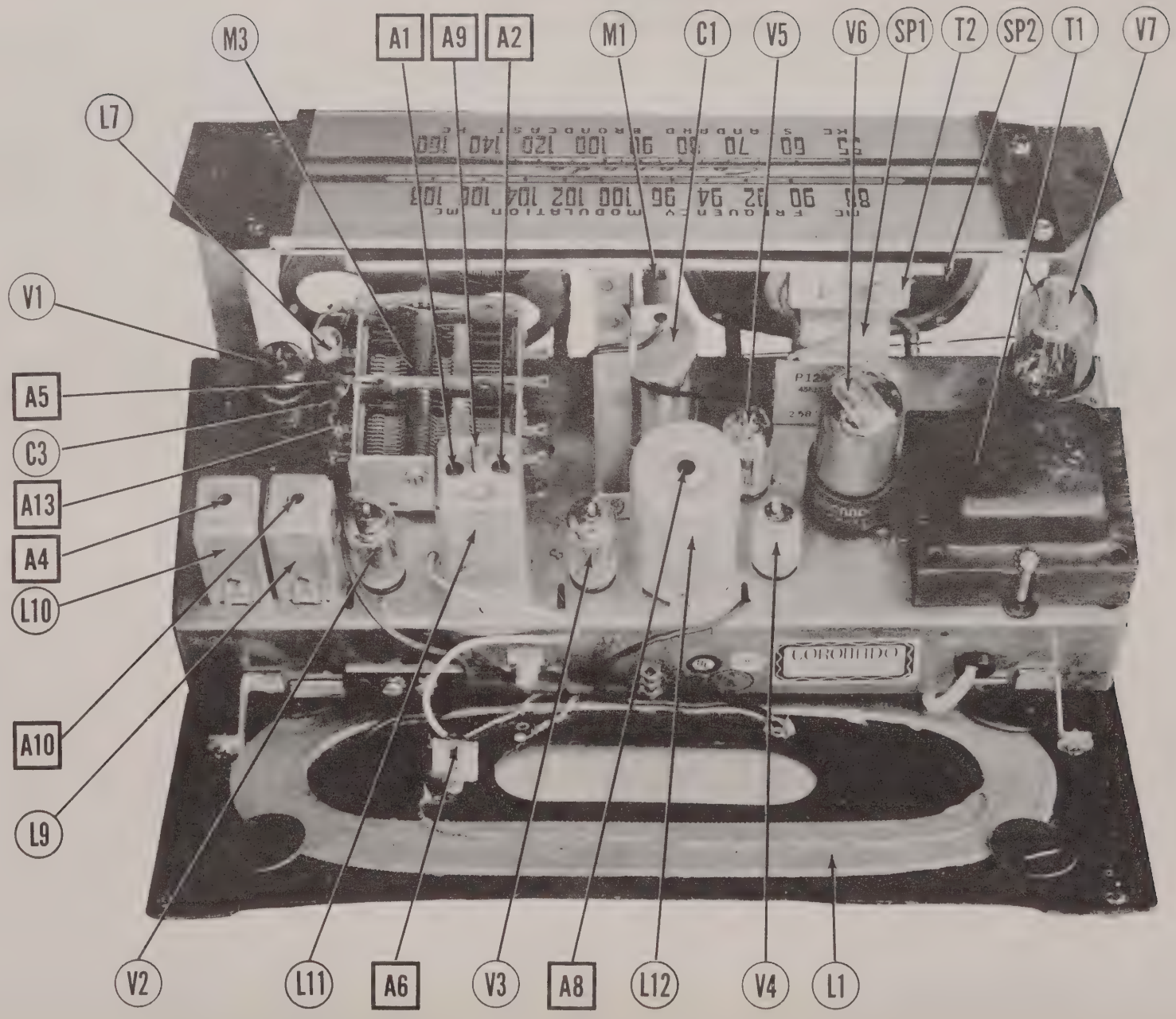
DATE 11/49 SET #75 FOLDER #6


M3
A1
A9
A2
M1
C1
V5
V6
SP1
T2
SP2
T1
V7
L7
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C3
A13
A4
L10
A10
L9
V2
L11
A6
V3
A8
L12
V4
L1

R16
R17
C28
R22
R21
R15
C2
A
R2
C27
C23
R18
R19
C20
C25
R6
C26
C22
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R14
C24
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R23
C21
R20
B
C19
R11
R12
C18
C17
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R9
C12
R8
C4
C15
L8
R7
M2
C14
C8
R3
R5
A11
A12
L2
R4
C9
A3
C11
C13
C7
L4
C6
L5
C5
C10
L3
L6

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6BA7	6BA7	8CT	
V2	1st IF Amp.	6BA6	6BA6	7BK	
V3	2nd FM IF Amp.	6BA6	6BA6	7BK	
V4	Ratio Det.	6AL5	6AL5	6BT	
V5	DET.-AVC-AF	6AV6	6AV6	7BT	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	200	45X360	AF88J4A	UP4445C		EL-422*	● Filter
B	40	150						■ Filter
C	20	25						▲ Output Cath. Bypass
C2	5	100	45X361	SRE150/5	BR415		UT-41	Stabilizing Cap.
C3	6		47X521					Fixed Trimmer
C4	12		47X522			GP1K-12		Fixed Trimmer
C5	15		47X552			GP1K-15	MS-415	RF Bypass
C6	47		47X517	1468-00005	5W5Q5	GP1K-47	1FM-45	Conv. Fil. Bypass
C7	5000		47X507	1467-005	1D5D5	811-005	29C1	Conv. Fil. Bypass
C8	47		47X517	1468-00005	5W5Q5	GP1K-47	1FM-45	Osc. Grid Cap.
C9	10		47X512	1469-00001	5R5Q1	NPOK-10	MS-41	Fixed Trimmer
C10	5000		47X507	1467-005	1D5D5	811-005	29C1	Conv. Screen Bypass
C11	5000		47X507	1467-005	1D5D5	811-005	29C1	Conv. Plate Dec.
C12	.05	200	B66503	P288-05	GT2S5		TM-15	AVC Filter
C13	.05	200	B66503	P288-05	GT2S5		TM-15	AVC Filter
C14	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Cathode Bypass
C15	5000		47X507	1467-005	1D5D5	811-005	29C1	1st IF Decoupling
C16A	50		47X112	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Filter
B	50			1468-00005	5W5Q5	GP1K-50	1FM-45	RF Filter
C17	100		47X476	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C18	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Cathode Bypass
C19	5000		47X507	1467-005	1D5D5	811-005	29C1	2nd IF Decoupling
C20	220		47X468	1468-00025	5W5T25	GP2K-220	1FM-325	Diode Load Cap.
C21	2700		47X492	1467-0025	1W5D25	GP2M-0027	1FM-23	De-emphasis
C22	68		47X471	1468-000075	5W5Q7	GP1K-68	1FM-475	Tone Compensation
C23	.04	200	B66403	P488-04	GT6S4		TM-14	Tone Compensation
C24	.005	400	D66503	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C25	220		47X468	1468-00025	5W5T25	GP2K-220	1FM-325	AF Plate Bypass
C26	.02	400	D66203	P488-02	GT4S2		TM-12	Audio Coupling
C27	.004	200	B66402	P688-004	GT6D4		TM-24	Tone Compensation
C28	.001	800	H66102	P1088-001	GT16D1		TR-21	Output Plate Bypass

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X372	Q13-133X	AT-78	Volume control, tapped @ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A Per Instructions
R2A	3 Meg.	½	40X285	Q13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L6	Parasitic Supp.	0Ω		9A1940		1 turn of wire on 10Ω resistor.
L7	FM Osc.	0Ω		9A2021		
L8	AM Osc.	0Ω		9A1997	14-1060	
L9	FM 1st IF	1.5Ω	.5Ω	9A2037		
L10	AM 1st IF	12Ω	12Ω	9A2038	16-6678	
L11	AM-FM 2nd IF	13Ω	13Ω	9A1999		Primary resistance includes FM primary.
L12	Ratio Det. Trans.	3Ω	0Ω	9A2036		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: CORONADO PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	7A103		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M2	Switch	2A375	Band
M3	2 Gang. Var. Cap.	14A204	(14-498MMF, 21-297MMF)
A6	Trimmer	17A256	BC Ant. Adj.
A12	Trimmer	17A255	FM Osc. Adj.
	Dial Glass	58X712	Brown Cabinet
	Dial Glass	58X713	Ivory Cabinet
	Dial Pointer	15X236	
	Cabinet	55X339	Brown
	Cabinet	55X338	Ivory
	Knob	10A699	Tuning
	Knob	10A700	Off/Volume } Brown Cabinet
	Knob	10A701	Tone
	Knob	10A702	Band
	Knob	10A703	Tuning
	Knob	10A704	Off/Volume } Ivory Cabinet
	Knob	10A705	Tone
	Knob	10A706	Band

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
R3	470Ω	½	B84471	BTS-470	Conv. Plate Decoupling
R4	22KΩ	½	B84223	BTS-22K	Osc. Grid
R5	2700Ω	½	B84272	BTS-2700	Osc. Anode
R6	100KΩ	½	B85104	BTS-100K	AVC Network
R7	68Ω	½	B83680	BW-½-68	1st IF Cathode
R8	1200Ω	½	B85123	BTS-1200	1st IF Decoupling
R9	47KΩ	½	B85473	BTS-47K	Diode Filter
R10	2.2 Meg.	½	B85225	BTS-2.2 Meg.	AVC Network
R11	68KΩ	½	B84683	BTS-68K	2nd FM IF Grid
R12	100Ω	½	B84101	BW-½-100	2nd FM IF Cathode
R13	1000Ω	½	B85102	BTS-1000	2nd FM IF Decoupling
R14	27KΩ	½	B85273	BTS-27K	De-emphasis
R15	3.6Ω	½	43X233	BW-½-3.9	Ratio Det. Filament Wire Wound
R16	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R17	6800Ω	½	B84682	BTS-6800	Ratio Det. Diode Load
R18	15KΩ	½	B85153	BTS-15K	Tone Compensation
R19	10 Meg.	½	B85106	BTS-10 Meg.	AF Grid
R20	470KΩ	½	B85474	BTS-470K	AF Plate
R21	470KΩ	½	B85474	BTS-470K	Output Grid
R22	270Ω	½	B84271	BW-½-270	Output Cathode
R23	1000Ω	2	D84102	BW-2-1000	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .33A	320VCT .057ADC	6.3VAC @ 2.6A		53X291	P-6119 †	P-3047 †	PH-50 †

† Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

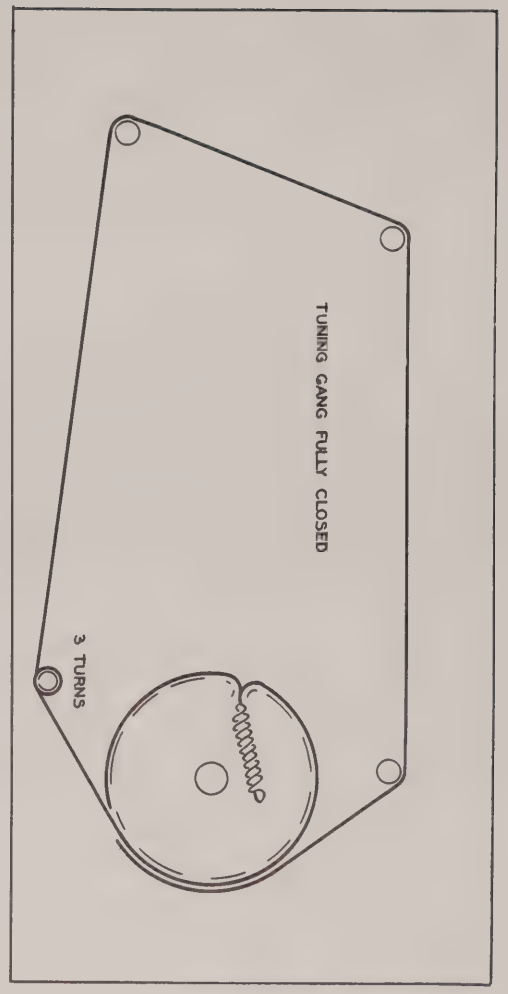
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5700Ω	3.5Ω	520Ω	.6Ω	Part of 12A493	A-3877	A-2930	RO-9	

SPEAKER

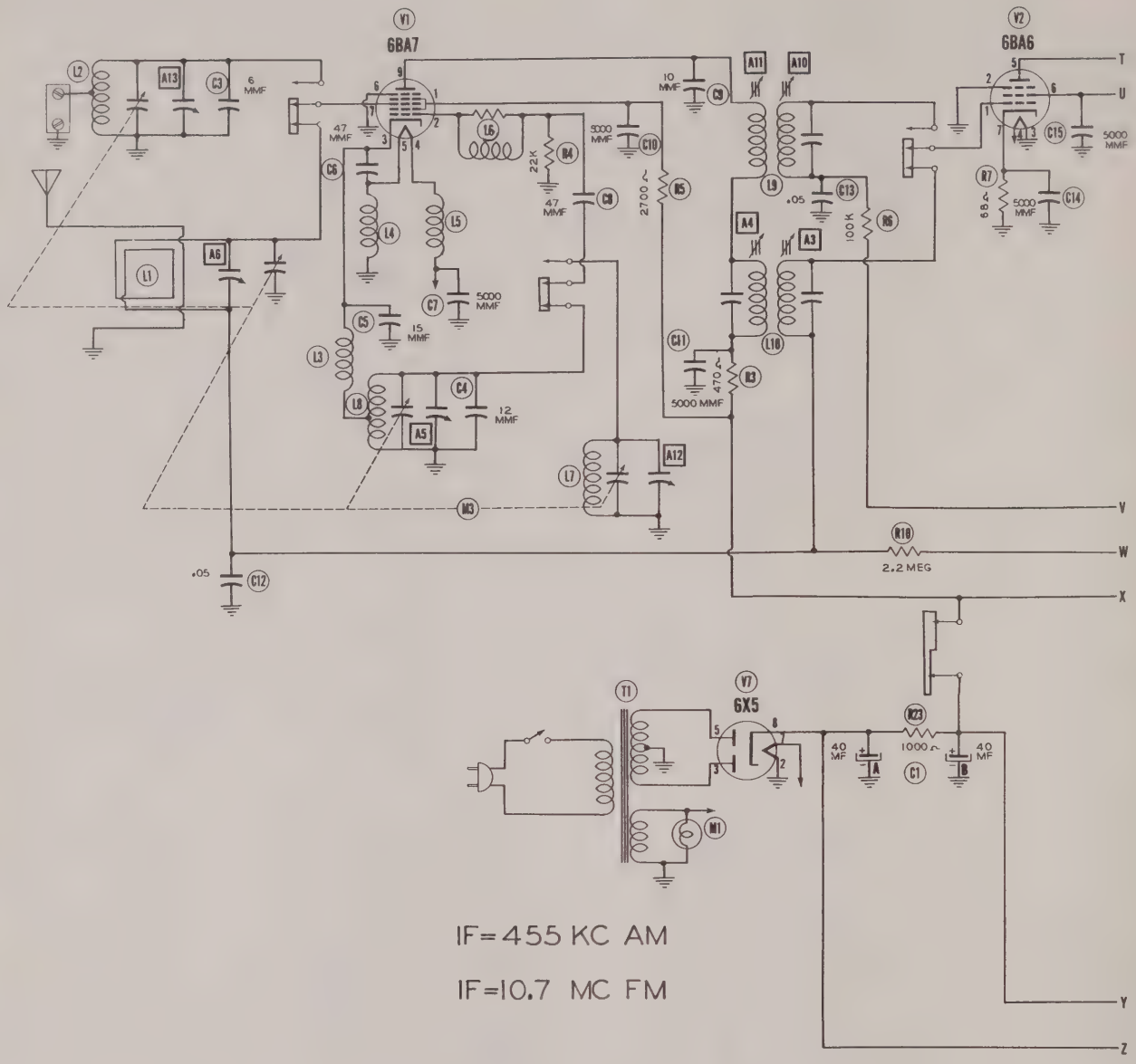
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V. C. IMP.	CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	12A493	ST-105 MOD.P5-X	4A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.
L1	AM Loop Ant.	0Ω	.5Ω	9A2040	
L2	FM Ant.	0Ω		9A1956	
L3	RF Choke	2.5Ω		35A5	
L4	Fil. Choke	0Ω		9A2044	
L5	Fil. Choke	0Ω		9A2044	



DATE 11/49 SET #75 FOLDER #6



IF=455 KC AM

IF=10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1A	6BA7	90VDC	§-7.4VDC	0V	0V	6.3VAC	0V	-.8VDC	0V	120VDC
‡ V1B	6BA7	85VDC	§-.6VDC	0V	0V	6.3VAC	0V	0V	0V	110VDC
V2	6BA6	-.6VDC	0V	0V	6.3VAC	107VDC	107VDC	.7VDC		
‡ V3	6BA6	0V	0V	0V	6.3VAC	100VDC	100VDC	1.4VDC		
‡ V4	6AL5	-.3VDC	.1VDC	0V	5.5VAC	.6VDC	0V	-.4VDC		
V5	6AV6	-.6VDC	0V	0V	6.3VAC	0V	-.5VDC	50VDC		
V6	6V6GT	0V	6.3VAC	150VDC	115VDC	0V	0V	0V	5.1VDC	
V7	6X5GT	0V	0V	162VAC	0V	162VAC	0V	6.3VAC	157VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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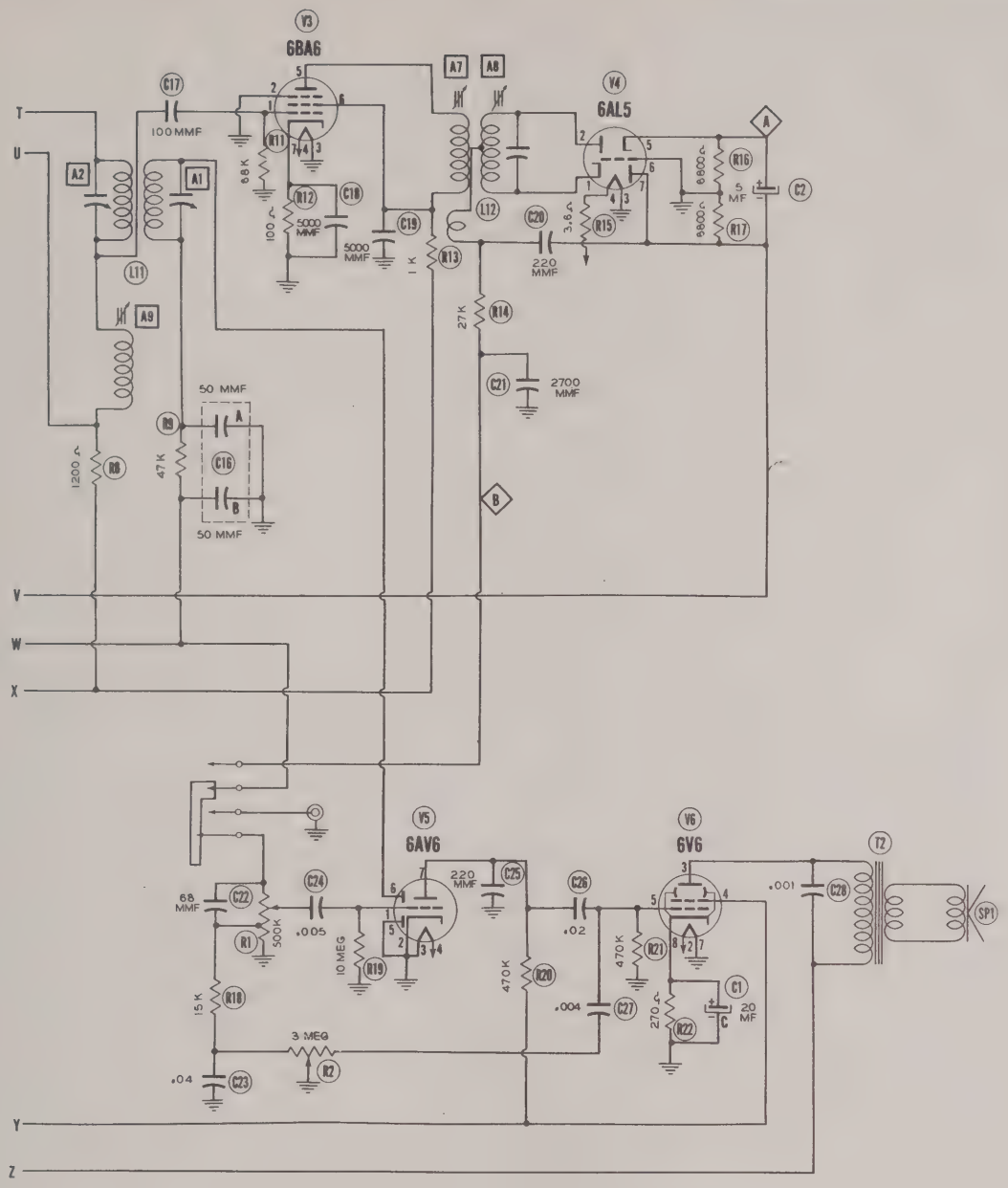

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
	V1A 6BA7	13.5KΩ	22KΩ	2Ω	0Ω	.1Ω	0Ω	2.7Meg.	0Ω	11.5KΩ
‡	V1B 6BA7	13.5KΩ	22KΩ	2Ω	0Ω	.1Ω	0Ω	0Ω	0Ω	11.5KΩ
	V2 6BA6	2.7Meg.	0Ω	0Ω	.1Ω	12.2KΩ	12.2KΩ	68Ω		
‡	V3 6BA6	68KΩ	0Ω	0Ω	.1Ω	12.2KΩ	12.2KΩ	100Ω		
‡	V4 6AL5	500KΩ	500KΩ	0Ω	1Ω	6.8KΩ	0Ω	6.8KΩ		
	V5 6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	500KΩ	†470KΩ		
	V6 6V6GT	Inf.	.1Ω	†500Ω	†1000Ω	470KΩ	Inf.	0Ω	270Ω	
	V7 6X5GT	Inf.	0Ω	125Ω	Inf.	130Ω	Inf.	.1Ω	50Ω	

† Measured from pin 8 of V7

VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

When complete receiver alignment is to be performed, it is essential that the order given be followed.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	455KC (400∿ Mod.)	AM (center pos.)	Tuning gang fully open	across voice coil	A1,A2	Adjust for maximum output.
2.	.1MFD	High side to pin 7 (Grid) of 6BA6 (V1). Low side to chassis.	455KC (400∿ Mod.)	"	"	"	A3,A4	"
3.	.1MFD	"	1620KC (400∿ Mod.)	"	"	"	A5	"
4.		Loop	1400KC (400∿ Mod.)	"	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Set dial pointer to 1400KC on dial scale.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If the AM section of the receiver has not been aligned, step 1 of AM alignment must be performed before beginning FM IF alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	2500MMF	High side to pin 1 (Grid) of 6BA6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM (max. clockwise)	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A7	Adjust for maximum deflection. Output of signal generator must be .1 volt for this adjustment. Note reading on VTVM.
6.	"	"	"	"	"	DC Probe to Point (B) Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 5 and 6.
7.	"	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	"	"	"	DC Probe to Point (A) Common to chassis.	A9	Adjust for maximum deflection.
8.	Direct	High side to ungrounded FM ant. terminal. Low side to chassis	"	"	"	"	A10, A11	Adjust for maximum deflection.
9.	Direct	"	"	"	"	"	A11	Solder a 330Ω resistor across terminals 3 and 4 (secondary) of first FM IF transformer. Adjust signal generator output to give the same reading noted in step 1. Adjust A11 for maximum deflection.
10.	Direct	"	"	"	"	"	A10	Remove the 330Ω resistor from terminals 3 and 4, and solder it to terminals 1 and 2 (primary) of the same transformer. Set signal gen. output same as in step 9. Adjust A10 for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.
See note under VTVM alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	2500MMF	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non interference	Vert.Amp. to Point (A) Low side to chassis.	A7,A9	Disconnect stabilizer capacitor C2. Adjust A7 and A9 for maximum amplitude and symmetry as per Fig 1.
6.	Direct	High side to ungrounded FM ant. terminal. Low side to chassis.	"	"	"	"	A10, A11	Adjust for maximum amplitude and symmetry as per Fig 1.
7.	Direct	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A8,A7	Reconnect capacitor C2. Adjust A8 so 10.7MC occurs at center of pattern as per Fig 2. Slightly retouch A7 for maximum amplitude and straightness of crossover lines. Continue with step 11.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	300Ω carbon res.	High side thru 300Ω to ungrounded FM ant. terminal. Low side to chassis.	108.4MC (Unmod.)	FM	Tuning gang fully open	DC Probe to Point (A) Common to chassis.	A12	Adjust for maximum deflection.
12.	"	"	104.5MC (Unmod.)	"	Tune for max. deflection.	"	A13	"

FIG. 1

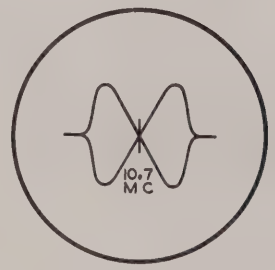

FIG. 2

DAVID BOGEN
MODEL HX50

DAVID BOGEN
MODEL HX50

TRADE NAME	David Bogen, Model HX50
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, New York
TYPE SET	AC Operated 4 Channel Audio Amplifier
TUBES(TWELVE)	Types 6SC7 Mic. 1 Amp., 6SC7 Mic. 2 Amp., 6SC7 Mic. 3 Amp., 6SC7 1st AF Amp., 6SL7GT 2nd AF Amp., 6SC7 3rd AF Amp., 6SL7GT 4th AF Amp.-Phase Inv., 6SN7GT Driver, (2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier
POWER SUPPLY	110-120 Volts AC RATING: 1.54 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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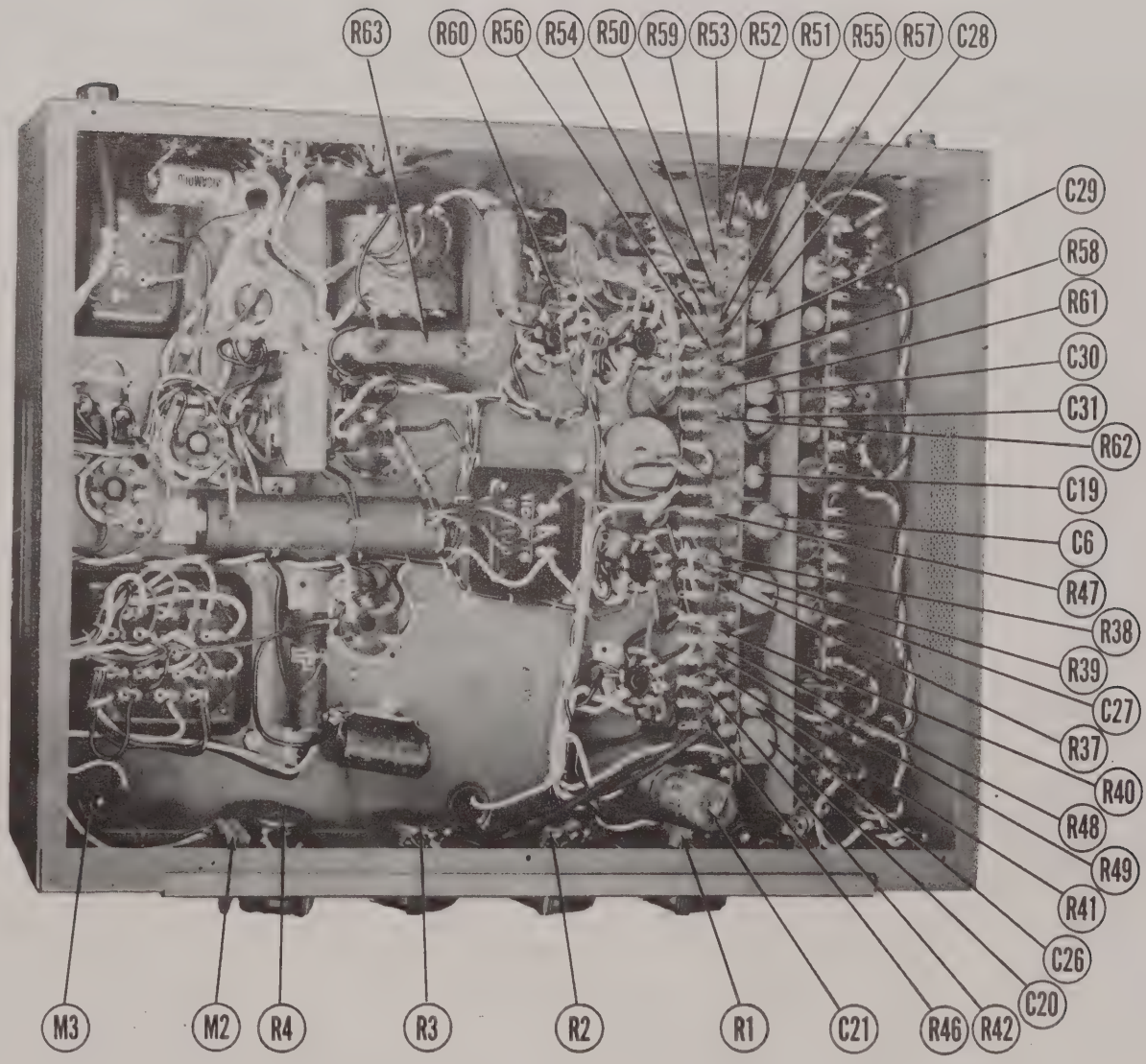

R63
R60
R56
R54
R50
R59
R53
R52
R51
R55
R57
C28
C29
R58
R61
C30
C31
R62
C19
C6
R47
R38
R39
C27
R37
R40
R48
R49
R41
C26
C20
C21
R46
R42
R1
R2
R3
R4
M2
M3

DAVID BOGEN
MODEL HX50

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Mic. #1 Pre-Amp.	6SC7	6SC7	8S	
V2	Mic. #2 Pre-Amp.	6SC7	6SC7	8S	
V3	Mic. #3 Pre-Amp.	6SC7	6SC7	8S	
V4	1st AF Amp.	6SC7	6SC7	8S	
V5	2nd AF Amp.	6SL7GT	6SL7GT	8BD	
V6	3rd AF Amp.	6SC7	6SC7	8S	
V7	4th AF Amp.- Phase Inverter	6SL7GT	6SL7GT	8BD	
V8	Driver	6SN7GT	6SN7GT	8BD	
V9	Power Output	807	807	T-5BB	
V10	Power Output	807	807	T-5BB	
V11	Rectifier	5Y3GT	5Y3GT	5T	
V12	Rectifier	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	4	600		GL600/4	TLAD6040		AP-46	Filter
C2A	8	500		GL475/8-8	EB10018		CL-88	Filter Red-Black
B	8	500						Filter Blue-Yellow
C3	50	50		PRS50/50	BR505		TVA-16	Bias Filter
C4A	10	450		AF22J ‡	UP5Q45 †		EL-210‡	◓ Decoupling
B	10	450						▲ Decoupling
C5A	5	450		AF2222J	UP5Q45		EL-410	◓ Decoupling
B	5	450						◘ Decoupling
C	5	450						▲ Decoupling
D	5	450						Decoupling
C6	100	25		PRS25/100	BRH251A		UHC-102	Cathode Bypass
C7	100	25		PRS25/100	BRH251A		UHC-102	" "
C8	100	25		PRS25/100	BRH251A		UHC-102	" "
C9	100	25		PRS25/100	BRH251A		UHC-102	" "
C10	100	25		PRS25/100	BRH251A		UHC-102	" "
C11	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C12	.25	200		P488-25	GT2P25		TC-2	" "
C13	.05	400		P488-05	GT4S5		TM-15	" "
C14	.25	200		P488-25	GT2P25		TC-2	" "
C15	.05	400		P488-05	GT4S5		TM-15	" "
C16	.25	200		P488-05	GT2P25		TC-2	" "
C17	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	" "
C18	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	" "
C19	.003	600		P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C20	.25	200		P488-25	GT2P25		TC-2	" "
C21	.5	400		484-5	GT4P5		TC-5	" "
C22	2000	500		1467-002	1W5D2	GP2M-002	1FM-22	Tone Compensation Note 1
C23	2000	500		1467-002	1W5D2	GP2M-002	1FM-22	Tone Compensation Note 1
C24	2000	500		1467-002	1W5D2	GP2M-002	1FM-22	" "
C25	2000	500		1467-002	1W5D2	GP2M-002	1FM-22	" "
C26	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C27	.25	200		P488-25	GT2P25		TC-2	" "
C28	.05	400		P488-05	GT4S5		TM-15	" "
C29	.01	600		P688-01	GT6S1	GP2-335-01	TM-11	" "
C30	.05	400		P488-05	GT4S5		TM-15	" "
C31	.05	400		P488-05	GT4S5		TM-15	" "
C32	.05	600		P688-05	GT6S5		TM-15	Tone Compensation
C33	.1	500		P688-1	GT6P1		TM-1	Line Filter

Note 1. Some models use one 4000MMF to replace these two capacitors.
† Parallel sections to obtain desired capacity.
‡ Use new mounting plates.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: D. BOGEN PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	25KΩ	½	V259B		M-41-W	Microphone 1 volume control.
R2	25KΩ	½	V259B		M-41-W	Microphone 2 volume control.
R3	25KΩ	½	V259B		M-41-W	Microphone 3 volume control.
R4	100KΩ	½	V-211-LA	Q13-128	M-51-Z	Phono Volume Control.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: DAVID BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.54A	1180VCT .051ADC	610VCT .118ADC	5VAC @ 2A	T361-2			
		SEC. 4	SEC. 5					
		5VAC @ 2A	6.3VAC @ 4.7A					

TRANSFORMER (DRIVER)

ITEM No.	RATING: INDUCTANCE	RATING: DC RES.	REPLACEMENT DATA: D. BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T2	10 Henries CT	140Ω CT	T119-1				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: D. BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T3	3KΩ CT	500Ω 125Ω 15Ω 8Ω 4Ω	65Ω CT	8.2Ω 4Ω .32Ω .25Ω .2Ω	T256-1	A-3301 *			* Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ↶)	REPLACEMENT DATA: D. BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.051A	50Ω	2.5Henries	T510-1	C-2304 *	C-3196 *	TR-4200*	* Drill new mounting holes.
L2	.118A	190Ω	5.5Henries	T501	C-2303 #	C-2993 #	R-8120 #	# Drill one new mounting hole.

TONE CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ↶)	REPLACEMENT DATA: D. BOGEN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L3		665Ω	9 Henries	T550				

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: D. BOGEN PART No.		NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
M2	Switch		On-Off
M3	Switch		Interlock
M4	Fuse		3 Amp.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESIST-ANCE	WATTS	D. BOGEN PART No.	IRC PART No.	CLAROSTAT PART No.	
R5	500KΩ	½	V284	Q11-133	M-61-Z	Bass Control.
R6	500KΩ	½	V284	Q11-133	M-61-Z	Treble Control.
R7A	150KΩ	½				Anti-Feedback Control and Switch.
B	300KΩ	½	V282			" " " " "
C	300KΩ	½				" " " " "

RESISTORS

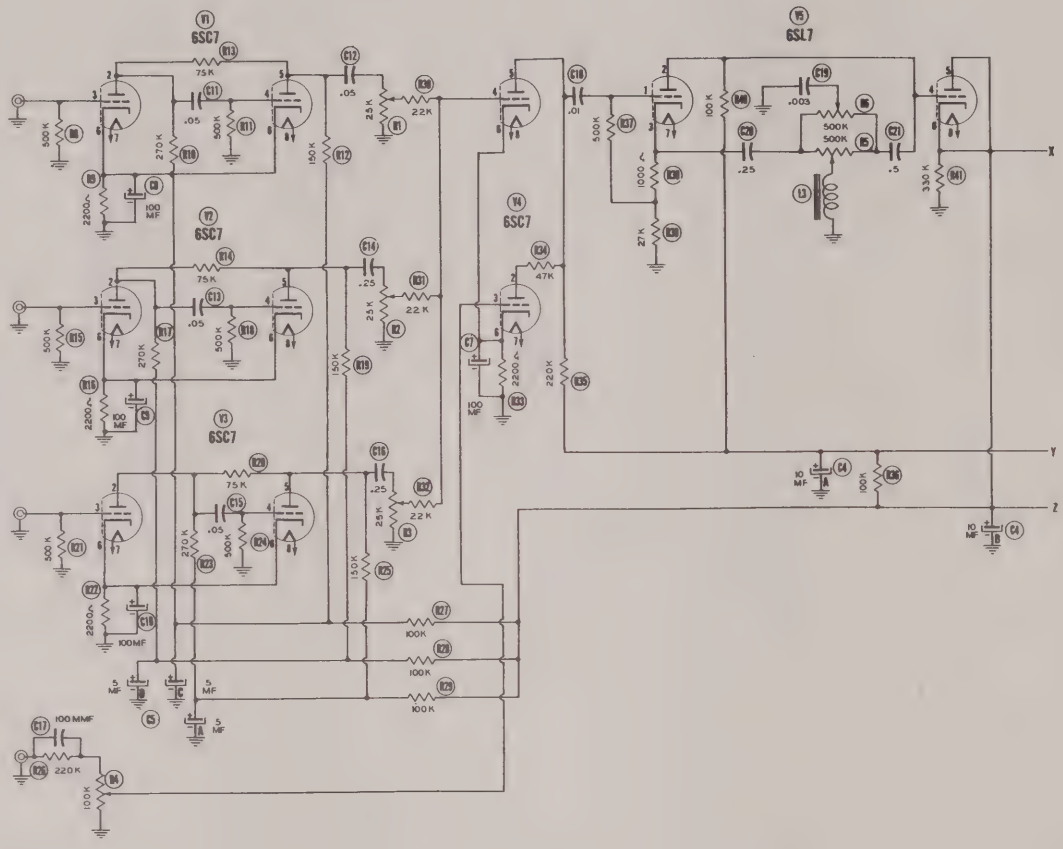
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	DAVID BOGEN PART No.	IRC PART No.	
R8	500KΩ	½		BTS-470K	1st Mic. Amp. Grid
R9	2200Ω	½		BTS-2200	1st Mic. Amp. Cathode
R10	270KΩ	½		BTS-270K	1st Mic. Amp. Plate Load
R11	500KΩ	½		BTS-470K	1st Mic. Amp. Grid
R12	150KΩ	½		BTS-150K	1st Mic. Amp. Plate Load
R13	75KΩ	½		BTS-82K	Feedback
R14	75KΩ	½		BTS-82K	Feedback
R15	500KΩ	½		BTS-470K	2nd Mic. Amp. Grid
R16	2200Ω	½		BTS-2200	2nd Mic. Amp. Cathode
R17	270KΩ	½		BTS-270K	2nd Mic. Amp. Plate Load
R18	500KΩ	½		BTS-470K	2nd Mic. Amp. Grid
R19	150KΩ	½		BTS-150K	2nd Mic. Amp. Plate Load
R20	75KΩ	½		BTS-82K	Feedback
R21	500KΩ	½		BTS-470K	3rd Mic. Amp. Grid
R22	2200Ω	½		BTS-2200	3rd Mic. Amp. Cathode
R23	270KΩ	½		BTS-270K	3rd Mic. Amp. Plate Load
R24	500KΩ	½		BTS-470K	3rd Mic. Amp. Grid
R25	150KΩ	½		BTS-150K	3rd Mic. Amp. Plate Load
R26	220KΩ	½		BTS-220K	Voltage Divider
R27	100KΩ	½		BTS-100K	1st Mic. Amp. Decoupling
R28	100KΩ	½		BTS-100K	2nd Mic. Amp. Decoupling
R29	100KΩ	½		BTS-100K	3rd Mic. Amp. Decoupling
R30	22KΩ	½		BTS-22K	Isolation
R31	22KΩ	½		BTS-22K	Isolation
R32	22KΩ	½		BTS-22K	Isolation
R33	2200Ω	½		BTS-2200	Mixer Cathode
R34	47KΩ	½		BTS-47K	Phono Amp. Plate Load
R35	220KΩ	½		BTS-220K	Mixer Plate Load
R36	100KΩ	½		BTS-100K	Decoupling
R37	500KΩ	½		BTS-470K	AF Grid
R38	1000Ω	½		BTS-1000	AF Cathode
R39	27KΩ	½		BTS-27K	AF Cathode
R40	100KΩ	½		BTS-100K	AF Plate Load
R41	330KΩ	½		BTS-330K	AF Cathode
R42	47KΩ	½		BTS-47K	Audio Coupling
R43	20KΩ	½		BTS-22K	Tone Compensation
R44	17KΩ	½		BTS-15K	Tone Compensation
R45	20KΩ	½		BTS-22K	Tone Compensation
R46	1 Meg.	½		BTS-1 Meg.	AF Grid
R47	3300Ω	½		BTS-3300	AF Cathode
R48	100KΩ	½		BTS-100K	AF Plate Load
R49	270KΩ	½		BTS-270K	AF Plate Load
R50	500KΩ	½		BTS-470K	AF Grid
R51	47KΩ	2		BT-2-47K	Feedback
R52	4700Ω	½		BTS-4700	AF Cathode
R53	750Ω	1		BTA-820	AF Cathode
R54	4700Ω	½		BTS-4700	Phase Inverter Cathode
R55	33KΩ	½		BTS-33K	Phase Inverter Grid
R56	500KΩ	½		BTS-470K	Phase Inverter Plate Load
R57	1 Meg.	½		BTS-1 Meg.	Audio Coupling
R58	500KΩ	½		BTS-470K	AF Plate Load
R59	47KΩ	½		BTS-47K	Decoupling
R60	1 Meg.	½		BTS-1 Meg.	Feedback
R61	1 Meg.	½		BTS-1 Meg.	Driver Grid
R62	1 Meg.	½		BTS-1 Meg.	Driver Grid
R63	250Ω	20		DG-250	Feedback
R64	1000Ω	1		BTA-1000	Output Screen Dropping
R65	1000Ω	20		DG-1000	Bias
R66A	10K	50		EPA-50,000	Filter See Note
B	40K				Bleeder
R67	33KΩ	½		BTS-33K	Decoupling
R68	4.7Ω	½		BW-½-4.7	Series Pilot Light

Note. On IRC replacement set slider at 10,000Ω from one end.

ANTI-FEEDBACK CONTROL

This control provides a narrow band variable frequency rejection filter to eliminate undesirable feedback at a particular frequency. Rotation of this control through its range provides frequency rejection from 300 cycles to 4000 cycles. This circuit does not affect the flat characteristics of the amplifier except at the selected frequency to be rejected.

To use this control effectively, the following procedure is suggested. With the system in operation, advance the gain control of the selected channel until feedback or "howl" occurs. Rotate the Anti-Feedback Control slowly through its range until the "howl" is eliminated. The gain control may now be advanced to a point just short of further "howl" or feedback.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SC7	0V	85VDC	♦0V	0V	85VDC	1.2VDC	♣	♣	
V 2	6SC7	0V	85VDC	♦0V	0V	85VDC	1.2VDC	♣	♣	
V 3	6SC7	0V	85VDC	♦0V	0V	85VDC	1.2VDC	♣	♣	
V 4	6SC7	0V	50VDC	0V	0V	35VDC	.6VDC	♣	♣	
V 5	6SL7GT	.6VDC	57VDC	9VDC	57VDC	200VDC	60VDC	♣	♣	
V 6	6SC7	0V	60VDC	0V	0V	75VDC	1.1VDC	♣	♣	
V 7	6SL7GT	0V	105VDC	1.6VDC	0V	110VDC	1.8VDC	♣	♣	
V 8	6SN7GT	-2.7VDC	≈300VDC	-1VDC	8.4VDC	≈300VDC	≈0V	♣	♣	TOP CAP 480VDC
V 9	807	♣	285VDC	-25VDC	0V	♣				TOP CAP 480VDC
V 10	807	♣	285VDC	-25VDC	0V	♣				
V 11	5Y3GT	0V	300VDC	0V	310VAC	NV	310VAC	0V	300VDC	
V 12	5R4GY	0V	490VDC	0V	600VAC	0V	600VAC	0V	490VDC	

♦ Input jack open
≈ Measured from center-tap of R65
♣ 6.4VAC measured between filament pins.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SC7	0Ω	1220KΩ	♦470KΩ	470KΩ	1220KΩ	2.2KΩ	100Ω	100Ω	
V 2	6SC7	0Ω	1220KΩ	♦470KΩ	470KΩ	1220KΩ	2.2KΩ	100Ω	100Ω	
V 3	6SC7	0Ω	1220KΩ	♦470KΩ	470KΩ	1220KΩ	2.2KΩ	100Ω	100Ω	
V 4	6SC7	0Ω	1350KΩ	3Ω	8KΩ	1300KΩ	2.2KΩ	100Ω	100Ω	
V 5	6SL7GT	500KΩ	1200KΩ	28KΩ	1200KΩ	135KΩ	330KΩ	100Ω	100Ω	
V 6	6SC7	0Ω	1350KΩ	1 Meg.	1 Meg.	1200KΩ	3.3KΩ	100Ω	100Ω	
V 7	6SL7GT	33KΩ	1500KΩ	4.7KΩ	470KΩ	1500KΩ	4.7KΩ	100Ω	100Ω	
V 8	6SN7GT	500KΩ	1180Ω	70Ω	1.4Meg.	1180Ω	70Ω	100Ω	100Ω	TOP CAP 15Ω
V 9	807	100Ω	11.2KΩ	700Ω	0Ω	100Ω				TOP CAP 80Ω
V 10	807	100Ω	11.2KΩ	700Ω	0Ω	100Ω				
V 11	5Y3GT	Inf.	10KΩ	Inf.	1000Ω	Inf.	1000Ω	Inf.	10KΩ	
V 12	5R4GY	Inf.	40KΩ	Inf.	1000Ω	Inf.	1000Ω	Inf.	40KΩ	

† Measured from pin 8 of V11
# Measured from pin 8 of V12
♦ Input jack open

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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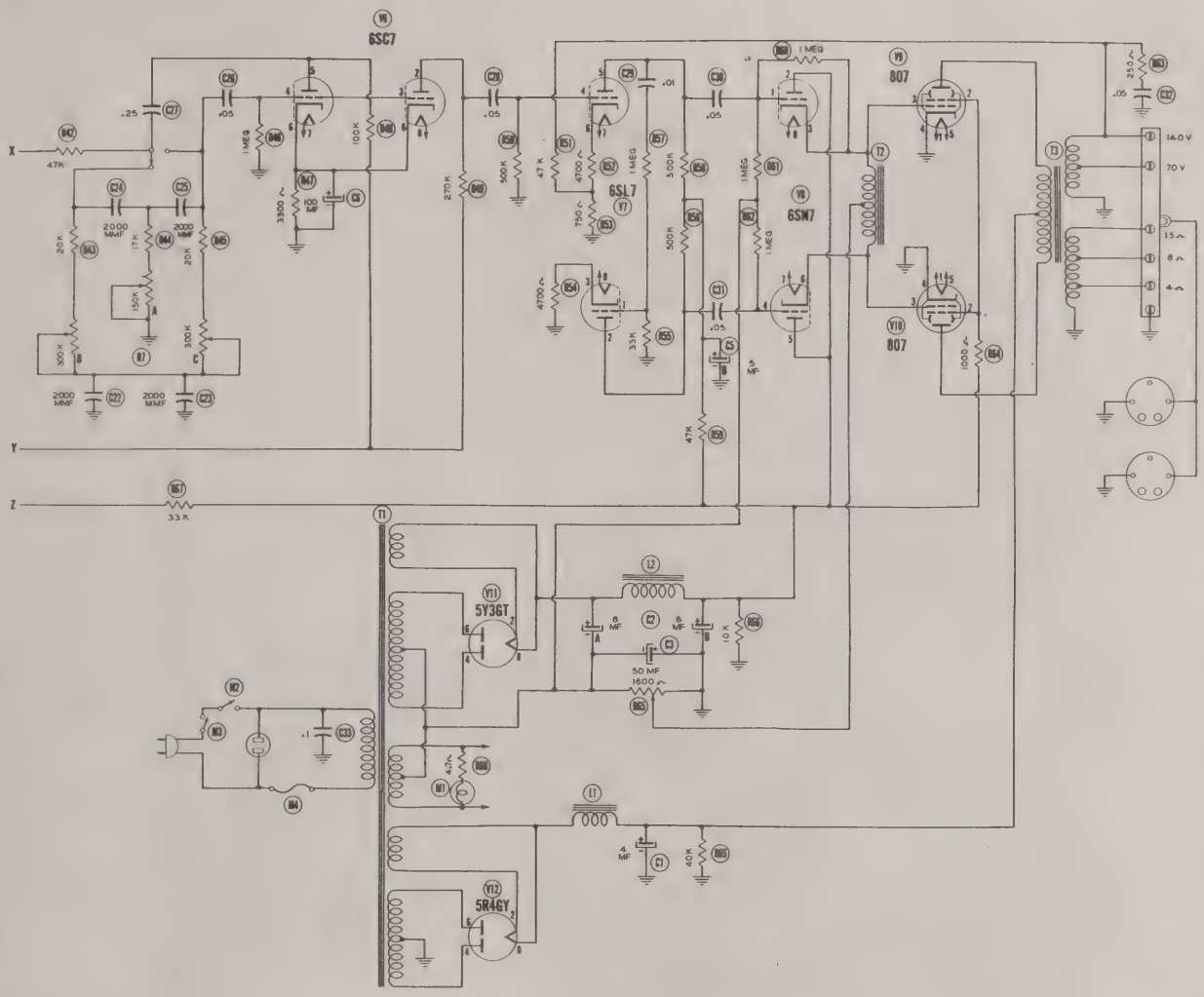

THE COOPERATION OF THE MANUFACTURER OF THIS
EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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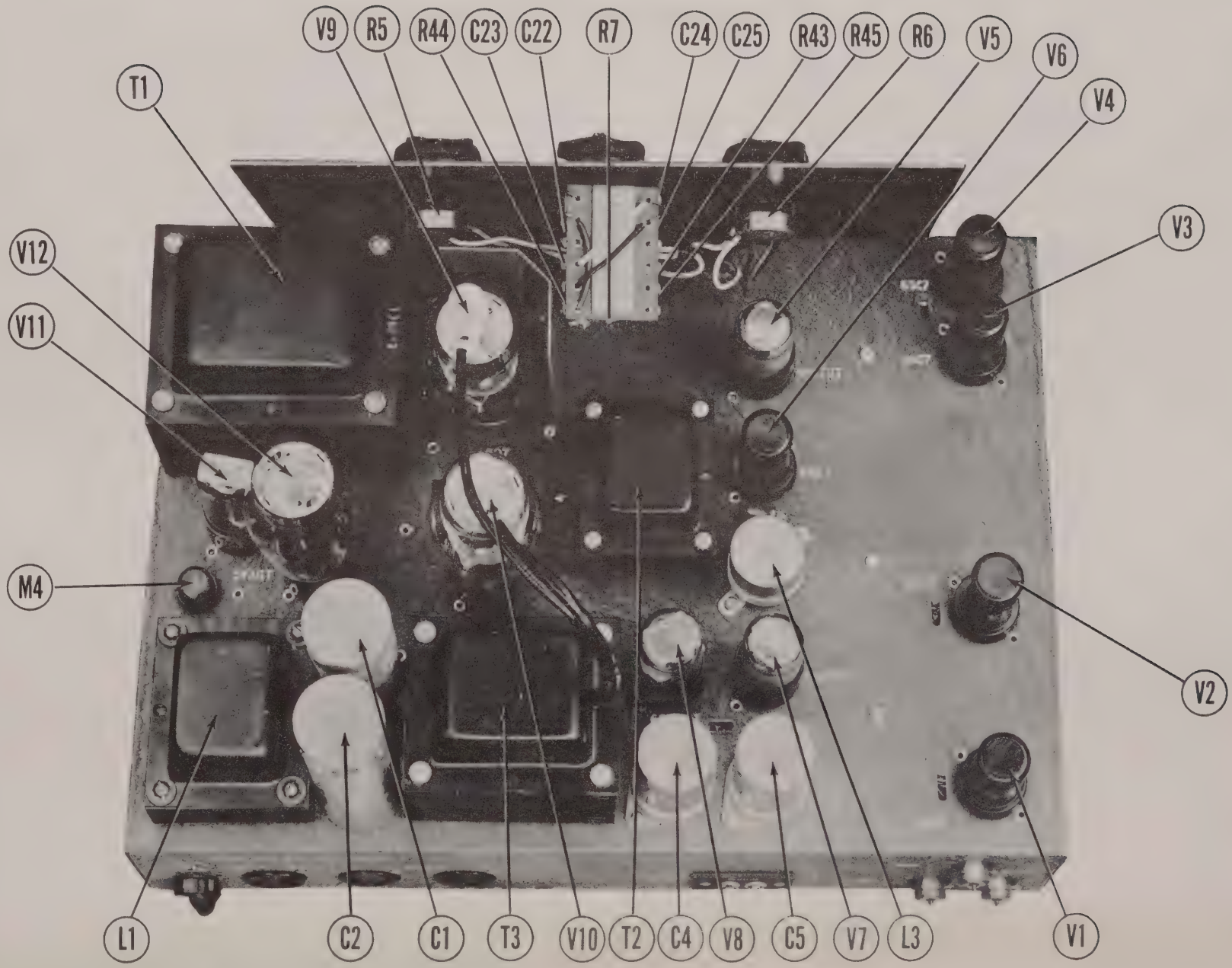
V9
R5
R44
C23
C22
R7
C24
C25
R43
R45
R6
V5
V6
V4
T1
V3
V12
V11
M4
V2
L1
C2
C1
T3
V10
T2
C4
V8
C5
V7
L3
V1

FIG. 1—MODEL P-72

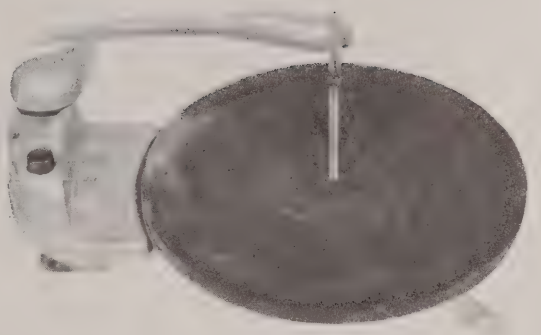

FIG. 2—MODEL P-73

FARNSWORTH
MODELS P-72 AND P-73

FARNSWORTH
MODELS P-72 AND P-73

GENERAL INFORMATION

The Farnsworth Models P-72 and P-73 changers are identical with the following two exceptions: The P-73 has a crystal pick-up, while the P-72 has a magnetic pickup. The P-73 does not incorporate a tone clarifier as used in the P-72. These models are designed to play and automatically change ten 12-inch, twelve 10-inch, or ten 10-inch and 12-inch records intermixed. These models will shut off automatically upon completion of the last record. These changers operate from a supply of 105-125 volts AC, at 60 cycles.

Manufactured by: **FARNSWORTH TELEVISION & RADIO CORPORATION**
FORT WAYNE, INDIANA

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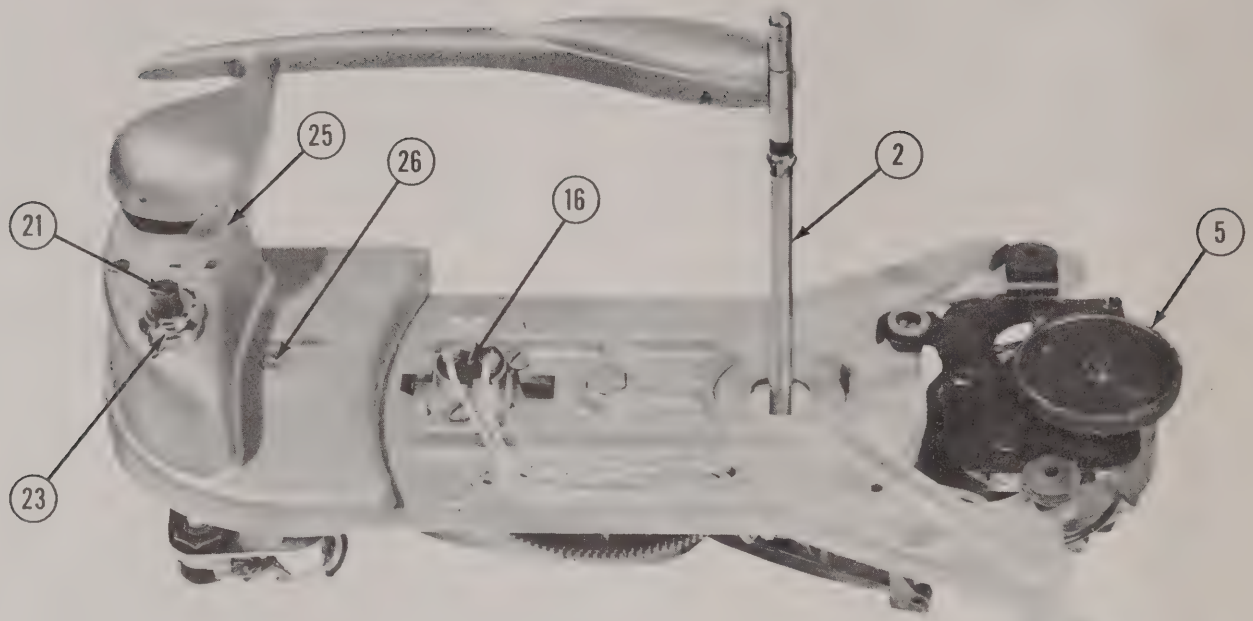

FIG. 3—TOP VIEW—LESS TURNTABLE

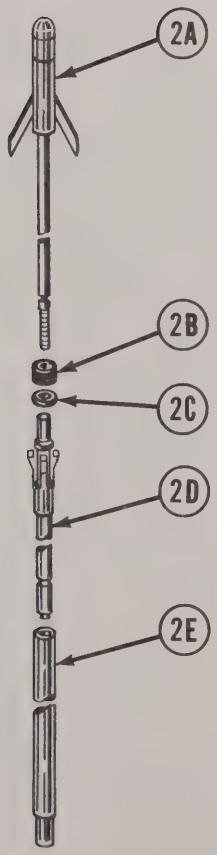

FIG. 4—SPINDLE ASSEMBLY

CHANGE CYCLE

After placing a stack of records on the spindle, turn the radio program switch to the phono position and press the reject button (21). This starts the automatic operation, dropping the first record to the turntable and lowering the tone arm to the starting groove.

The motion of the tone arm is transmitted to the swing lever (33) through the crank and pin assembly (32). Therefore as the tone arm moves into the eccentric groove of the record, the swing lever (33) moves against the reset lever (J) of the main cam (52) causing the starting-lever (H) Fig. 6 to engage the starting pawl on the turntable hub. This sets the main cam (52) in motion, starting a new change cycle.

As the main cam revolves, the lift lever (42) moves out of the recess (L) and up the incline of track (M) of the cam, raising the tone arm off the record. The swing lever (33) now swings the tone arm out clear of the record.

Compression lever (55) following the cam track (O), Fig. 7 causes the upper spindle assembly (A) to be pulled down compressing the rubber sleeve (B), Fig. 4, which expands it. This holds all the records but the bottom record which is resting on the spindle shelf. Further rotation of the cam causes the inner spindle assembly (D) to be pulled into the outer spindle (E) thus dropping the record to the turntable.

The swing lever (33) now moves the tone arm in over the record. Normally the set-down point is in the 10-inch position, which allows the step in the swing

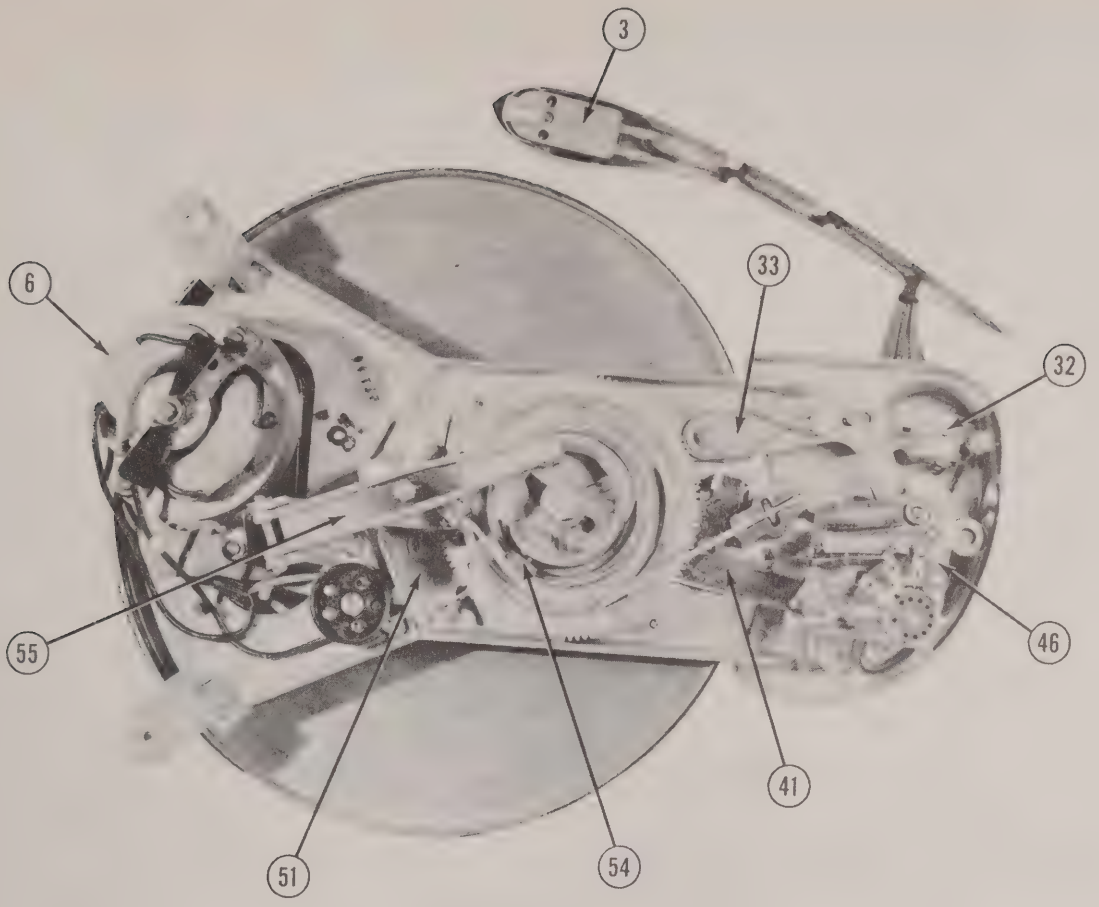

FIG. 5—BOTTOM VIEW

lever (33) to engage the interceptor lever (25). However, if a 12-inch record is dropped to the turntable, it strikes the interceptor lever (25), pivoting it in front of the swing lever (33), which as a result positions the tone arm for a 12-inch record.

The lift lever (42) rides down the incline of cam track (M), lowering the tone arm to the record.

A boss on the cam hub (52) actuates the interceptor lever (38), which in turn moves the interceptor lever (25) from in front of the swing lever (33). This gives free movement to the tone arm across the record.

The end of the lift lever (42) moves into the recess (L) of the cam, which holds the cam in a neutral position while a record is being played. This completes the change cycle.

Removing the Turntable

In order to remove the turntable, loosen the screws holding the hold down brackets (51) in place, turn the brackets to one side and tighten the screws. This frees the turntable which may be removed by lifting straight up.

Removing the Spindle

The spindle may be removed by removing the hex nuts (57) and (59) and the flat spring (56). Lift the compression lever (55) out of position. Remove the E washers and the record lift bracket (53). The spindle may now be removed by lifting straight up. Do not attempt to repair assemblies but replace with new parts.

ADJUSTMENTS

Tone Arm Set-Down

The tone arm set-down point may be adjusted as follows:

Place a 10-inch record on the turntable. Turn the changer on and observe the landing point of the arm. If needle lands too close to outer edge of record, turn the adjusting screw (26) in direction indicated on baseplate. If needle landing was too far from outer edge of record, turn adjust screw in opposite direction. This adjustment should be sufficient for a 12-inch record.

Tone Arm Height

Place a 10-inch record on the spindle and turn the turntable by hand through the change cycle until the tone arm is at its highest point. To adjust the height of the tone arm, loosen the hex nut (43) and adjust the screw (40) until the correct height is obtained.

Velocity Trip Adjustment

Break the seal on the adjusting screw, which is located in hole (X) in the bottom of the cam (52), Fig. 7. Turn to the left to tighten until the tone arm will trip on the record. Check the adjustment. After the adjustment is made, seal the screw threads to prevent the screw from coming out of adjustment.

Automatic Shut-Off

The changer should shut off after last record is

A PHOTOFACT "EXPLODED" VIEW

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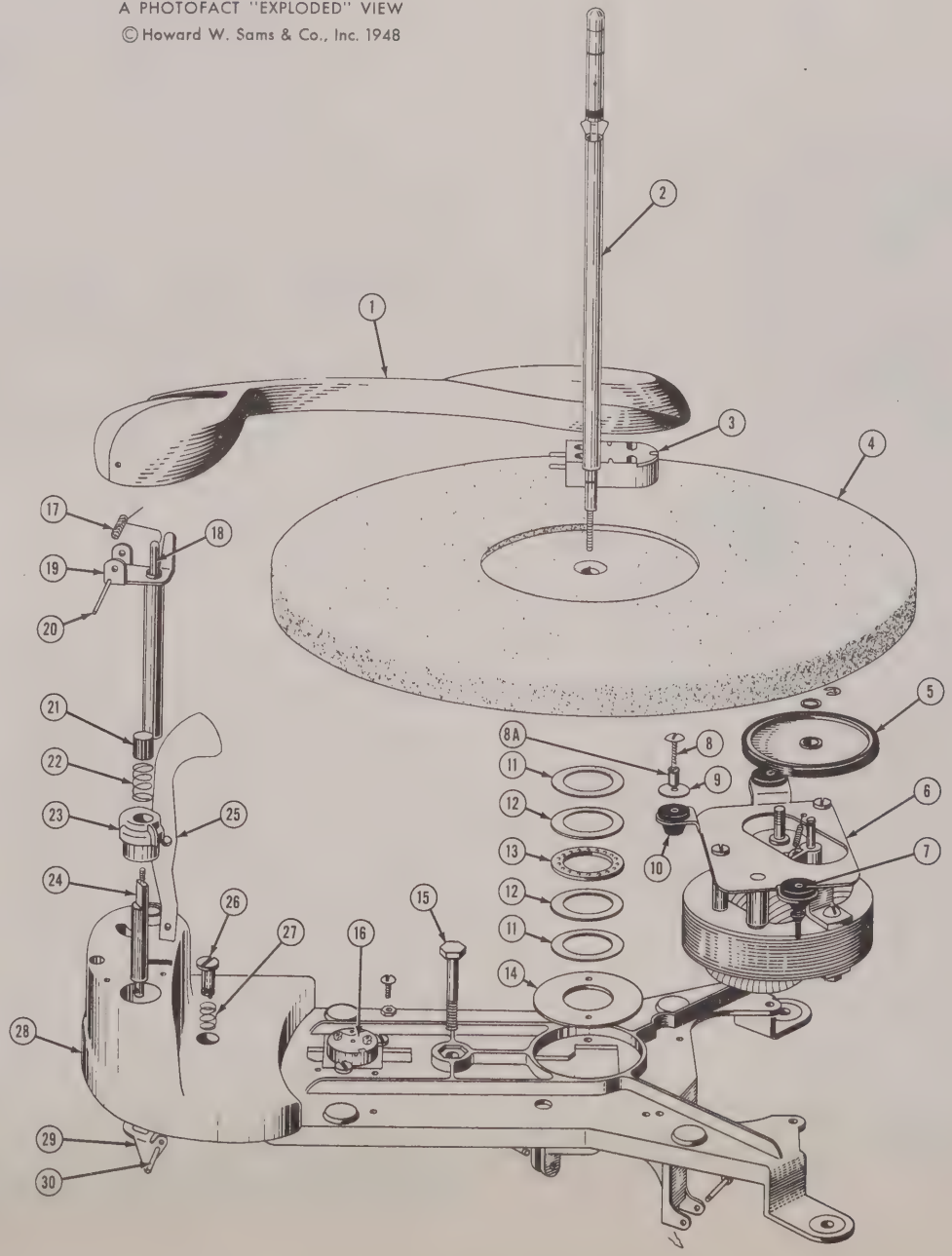

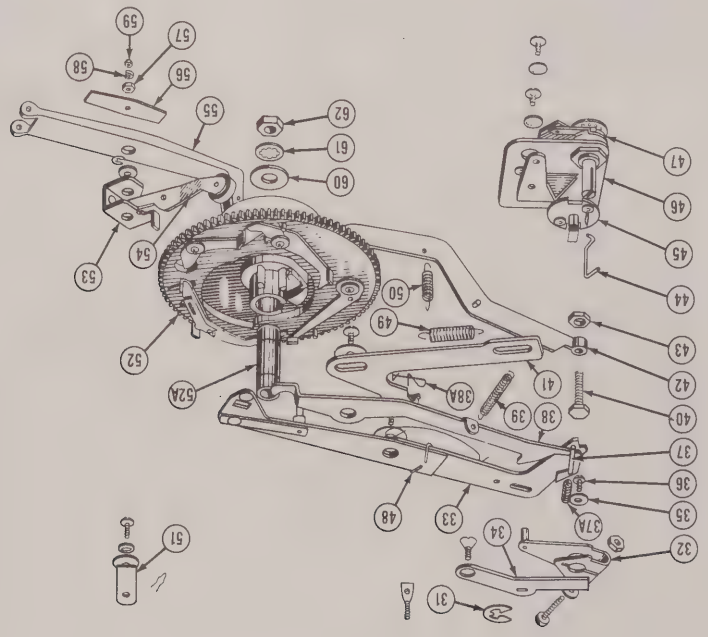
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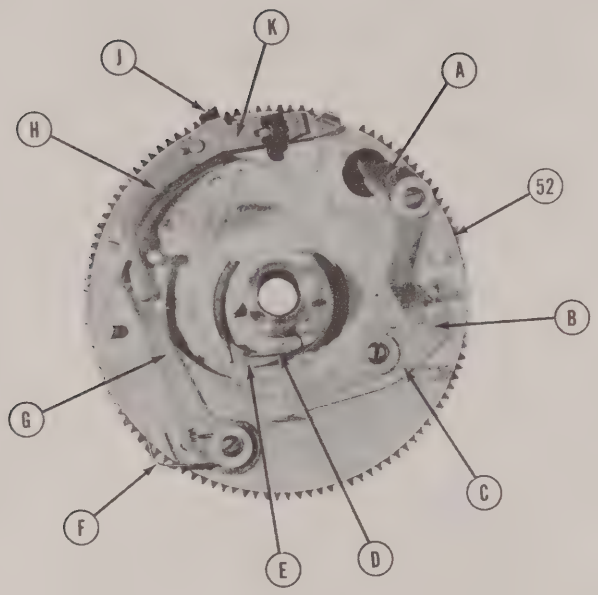

FIG. 6—TOP VIEW CAM ASSEMBLY

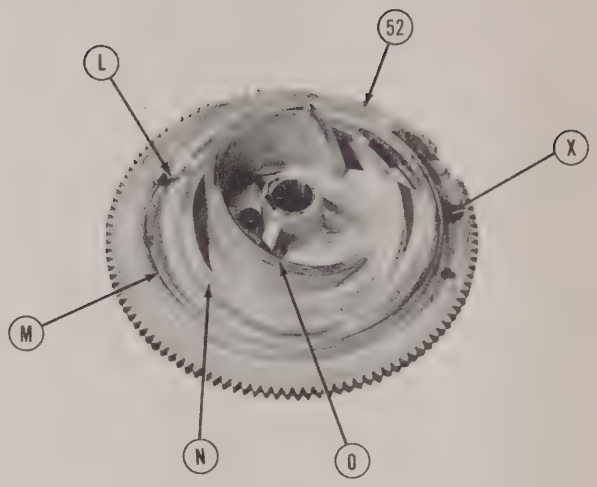

FIG. 7—BOTTOM VIEW CAM ASSEMBLY

played. This is due to the lack of record weight on the spindle. The spindle should have approximately 3/32-inch vertical motion when no records are on the spindle. If changer does not shut off or if it shuts off before last record is played, see that spindle is not sticking. It should have a free vertical motion. Also check stop pawl for binding.

TROUBLES

Changer Fails to Trip

1. The velocity trip (H) not adjusted properly. See "Velocity Trip Adjustment."
2. The starting lever (H) binding.

Manual Reject Fails to Trip Changer

1. Trip spring (F) of the cam (52) bent or broken.

Discriminator Lever Not Being Reset

1. Spring (39) loose, not actuating the reset lever (38).

More Than One Record Drops to the Turntable

1. Records too thin.
2. Center hole too large.
3. Spindle out of adjustment. Tighten the nuts on the compression lever until the rubber sleeve (2B) on the spindle reaches .330" to .337" diameter when fully compressed.

Changer Fails to Shut Off

1. Faulty switch (16).
2. Spindle sticking in a downward position, thereby not raising to contact the shut-off pawl.

Pickup Arm Fails to Raise from Record

1. Spring (50) loose. This allows the lift lever (42) to drop out of the mechanism.

LUBRICATION

Lubrication at time of manufacture is sufficient for a long period of time. However, if a major part or assembly is replaced or is defective, due to excessive use, clean all dirt, old oil, or grease from the mechanism with carbon tetrachloride or other similar cleaning fluid.

Use only a good grade of electric motor oil.

There is a self-lubricating type bearing in the turntable with an oil reservoir which may be filled through the four holes in the turntable hub.

Use a light grease of the vaseline type on all surfaces of the main cam (52) and all working parts on the main cam.

Oil all moving parts except those that depend upon friction in order to operate properly.

Caution: Do not oil or grease the velocity trip assembly, motor pulley, idler pulley or turntable rim. Avoid excessive lubrication. Over-lubrication may cause parts to stick.

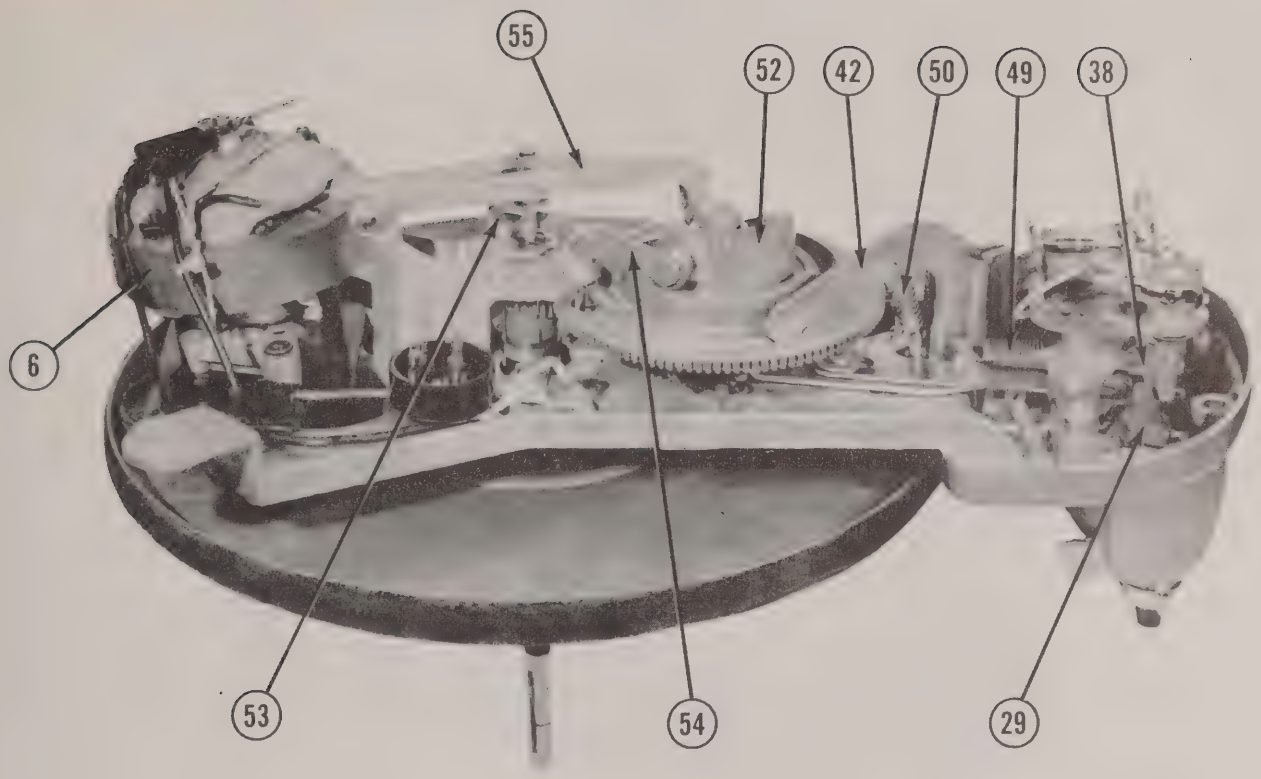

FIG. 8—BOTTOM FRONT VIEW

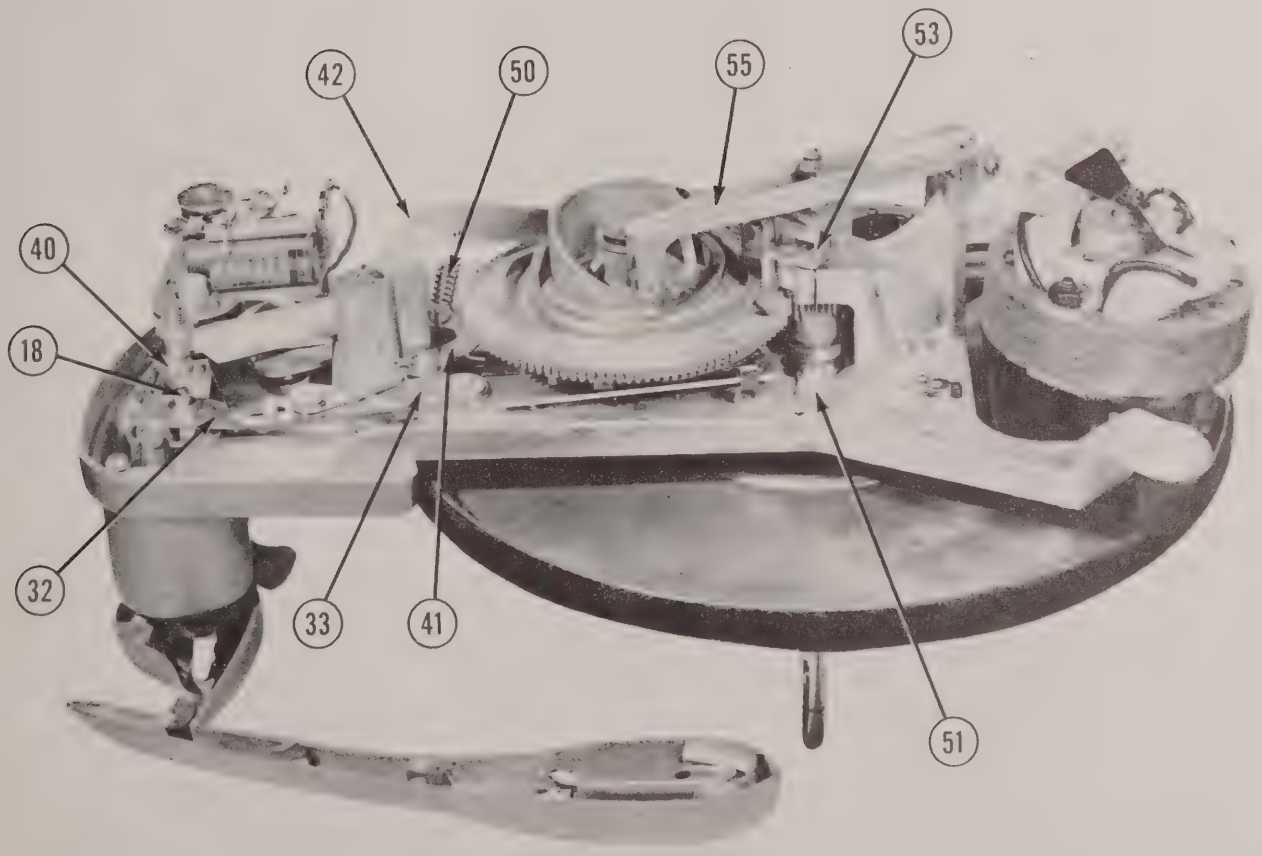

FIG. 9—BOTTOM BACK VIEW

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	57267	Tone arm
2		Spindle assembly
2A	13674	Upper spindle assembly
2B	62152	Rubber sleeve for record spindle
2C	55345	Sleeve support washer
2D	11379	Inner spindle assembly
2E	55334	Outer spindle
3	71235	Magnetic pickup (P-72)
	71243	Crystal pickup (P-73)
4	07594	Turntable assembly
5	13819	Idler pulley
6	44064	Phono motor
7		Rubber mountings—motor
8	2085-215	Motor mounting bolt (No. 6-32 x 5/8 in.)
8A	55337	Motor mounting spacer
9	37340	Brass washer
10	62173	Rubber motor mounting grommet
11	60597	Cork washer for turntable bearing
12	58716	Bearing race washer
13	13816	Ball bearing and retainer
14	58702	Bearing support washer
15	55336	Mounting bolt for main cam
16	15196	Automatic stop switch assembly
17	64437	Tone arm counterbalance spring
18	55341	Tone arm lift rod
19	11377	Tone arm support tube and bracket assembly
20	55339	Hinge pin
21	59486	Reject button for P-72
	09367	Reject button and plunger assembly for P-73
22	64474	Spring for reject button
23	57262	Tone clarifier knob (chrome) for P-72
24	55343	Reject plunger
25	58698	Tone arm interceptor lever
26	55328	Tone arm adjusting stud
27	64433	Spring for tone arm adjustment
28		Main frame
29	55395	Hinge pin for reject link
30	58852	Manual reject link
31	37333	"E" washer (for tone arm adjusting stud)
32	15197	Tone arm crank and pin assembly
33	15193	Tone arm swing lever assembly
34	58697	Tone arm adjusting lever
35		Flat washer
36		No. 6-32 x 3/16 mounting screw for interceptor lever
37	55329	Pin for tone arm interceptor lever
37A	64434	Spring for tone arm interceptor lever
38	58692	Interceptor reset lever
38A	64464	Switch release spring
39	64429	Reset spring
40	37511	No. 10-32 x 5/8-in. H.H.M.S. height adjusting screw
41	58693	Switch and reject lever
42	58694	Tone arm lift lever
43	2015-007	No. 10-32 hex nut
44	64465	Tone switch coupling link
45	80030	Phono output jack
46	13825	Tone switch and bracket assembly complete
47	90243	Tone selector switch
48		Swing lever assembly spring
49	64430	Reject spring
50	64431	Lift lever spring
51	58701	Turntable hold down bracket
52	15220	Main cam (casting only)
52AA	55335	Cam spacer (inside main cam hub)
52A	58709	Hold out locking lever
	37335	Washer (No. 4 x 3/8-in. O.D.)
	37337	Mounting screw levers (H.M.S. No. 4-36 x 1/4 in.)
52B	58708	Tone arm hold out lever
52C	64466	Spring for hold out lever
52D	64452	Cam switch spring
	2006-011	No. 2-56 x 7/16-in. Fil. M.M.S.
52E	57248	Main cam switch
52F	64467	Trip spring
52G	58707	Reject lever
52H	58706	Starting lever
52J	58853	Starting reset lever
52K	58854	Starting lever spring
52X	55397	Trip adjusting screw
53	07593	Record lift lever bracket assembly
54	07651	Record lift lever assembly
55	15195	Compression lever assembly
56	58789	Compression spring
57	37344	Special hex nut (No. 3-48)
58	2020-003	Split lockwasher (No. 3)
59	2015-002	Hex nut (No. 3-48)
60	37339	Flat washer (1/4 in. I.D. x 5/8 in. O.D. x 1/16 in. thick)
61	2019-007	1/4-in. S.P. internal tooth lockwasher
62	36857	1/4-28 hex nut

GENERAL ELECTRIC MODEL 143
(BATTERY-LINE OPERATED)

GENERAL ELECTRIC MODEL 143
(BATTERY-LINE OPERATED)

GENERAL ELECTRIC MODEL 143

TRADE NAME	General Electric, Model 143
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1S5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY RATING:	105-120 Volts AC-DC or 7.5 volts "A" Supply and 90 Volts "B" Supply in Pack Form .16 Amp. @ 117 Volts AC or 39MA @ 7.5 Volts DC and 9MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod.)	550KC	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.		Loop	1620KC (400~ Mod.)	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1500KC (400~ Mod.)	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Replace the set in the cabinet and set the pointer to 1500KC.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		G. E. PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	DET.-AVC-AF	1S5	1S5	6AU	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	RCE-095	AF88D	UP4415		ELS-7	■ Filter
B	40	150		PRS25/250	BRH2525		UHC-202	▲ Filter
C	200	20						Filament Bypass
C2	100	6	RCE-099	PRS6/100	BRH601		UHC-106	Filament Bypass
C3	.02	200	UCC-009	P488-02	GT2S2		TM-12	AVC Filter
C4	.02	200	UCC-009	P488-02	GT2S2		TM-12	Decoupling
C5A	330		RCW-3015	1468-0003	5W5T3	GP2K-330	1FM-335	Diode RF Filter
B	2000			1467-002	1W5D2	GP2M-002	1FM-22	Audio Coupling
C	5000			1467-005	1D5D5	GP2M-005	1FM-25	AF Screen Bypass
D	220			1468-00025	5W5T25	GP2K-220	1FM-325	AF Plate Bypass
E	4000			1467-004	1D5D4	GP2M-0047	1FM-24	Audio Coupling
C6	.002	200	UCC-002	P688-002	GT6D2	GP2M-002	TM-22	Output Plate Bypass
C7	.05	400	UCC-028	P488-05	GT4S5		72P51	Line Isolation
C8	.03	400	UCC-042	P488-03	GT4S3		TM-13	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	RRC-107	Q13-133	15/16-60-Z	Volume control
B	Switch		Not Req.	76-2 *	Switch DPST #	

* Attach to R1A per instructions
\# Attached at factory.

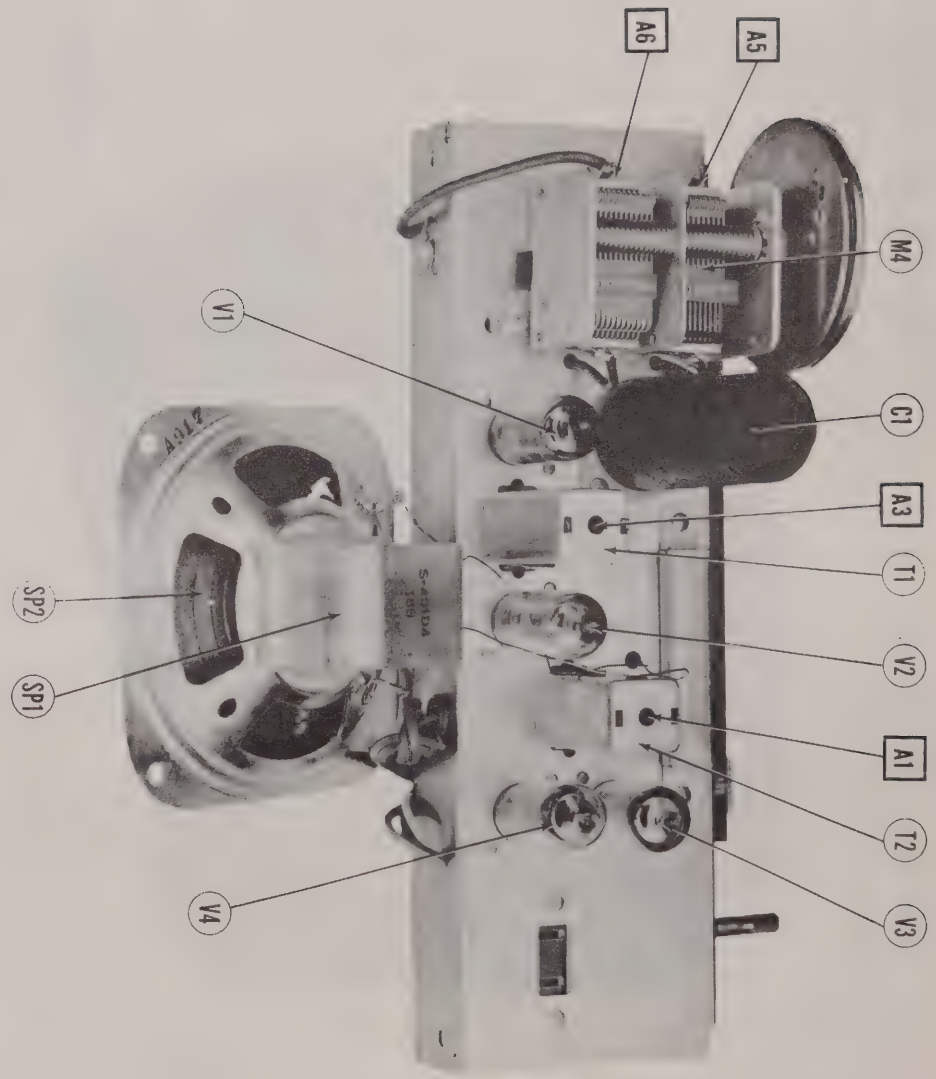
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	G. E. PART No.	IRC PART No.	
R2	100KΩ	½	URD-097	BTS-100K	Osc. Grid
R3	8200Ω	½	URD-071	BTS-8200	Decoupling
R4	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	AVC Network
R5	10 Meg.	½	URD-145	BTS-10 Meg.	AF Grid
R6	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	AF Screen
R7	470KΩ	½	URD-113	BTS-470K	AF Plate
R8	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Output Grid
R9	470KΩ	½	URD-113	BTS-470K	Isolation
R10	680Ω	½	URD-045	BTS-680	Filament String
R11	1500Ω	½	URD-053	BTS-1500	Filament String
R12	2200Ω	1	URE-057	BW-1-2200	Filter
R13	2300Ω	10	RRW-042	AB-2250	Voltage Dropping Wire Wound
R14	68Ω	1	URE-021		Surge Limiter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		G. E. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	11KΩ	4Ω	680Ω	.3Ω	RT0-070	A-3329	A-2932 †	RO-16 †	† Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA G. E. PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113		
SP1	PM	4Ω	U0P-457	MOD.P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA G. E. PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	1.6Ω		RLL-035	
L2	Osc. Coil	3Ω	8Ω	RLC-089	
L3	Input IF	21Ω	22Ω	RTL-052	16-6668
L4	Output IF	14Ω	17Ω	RTL-079	16-6669

BATTERIES

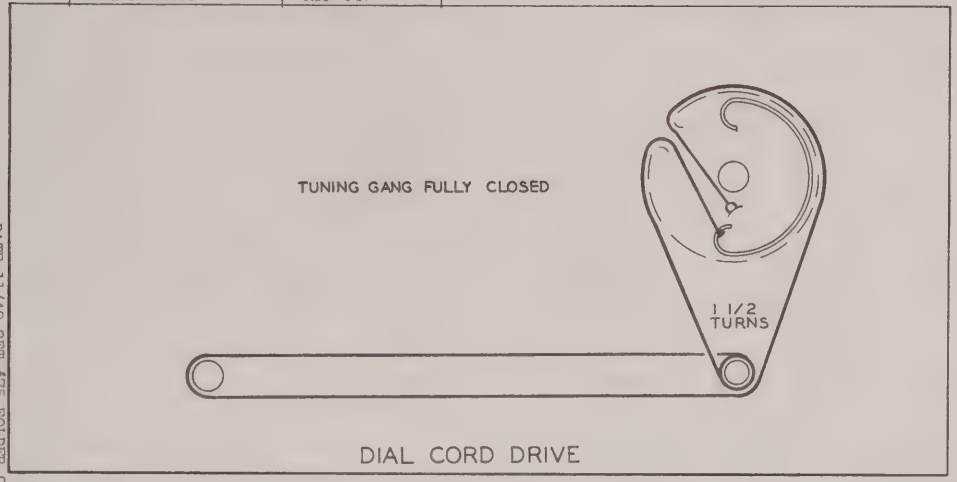
ITEM No.	VOLTAGE	G. E. PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	7.5V "A" 90V "B"				756			T5Z60	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA G. E. PART No.	SYLVANIA PART NO.		NOTES
M2	.70A	REX-005	NC-5		

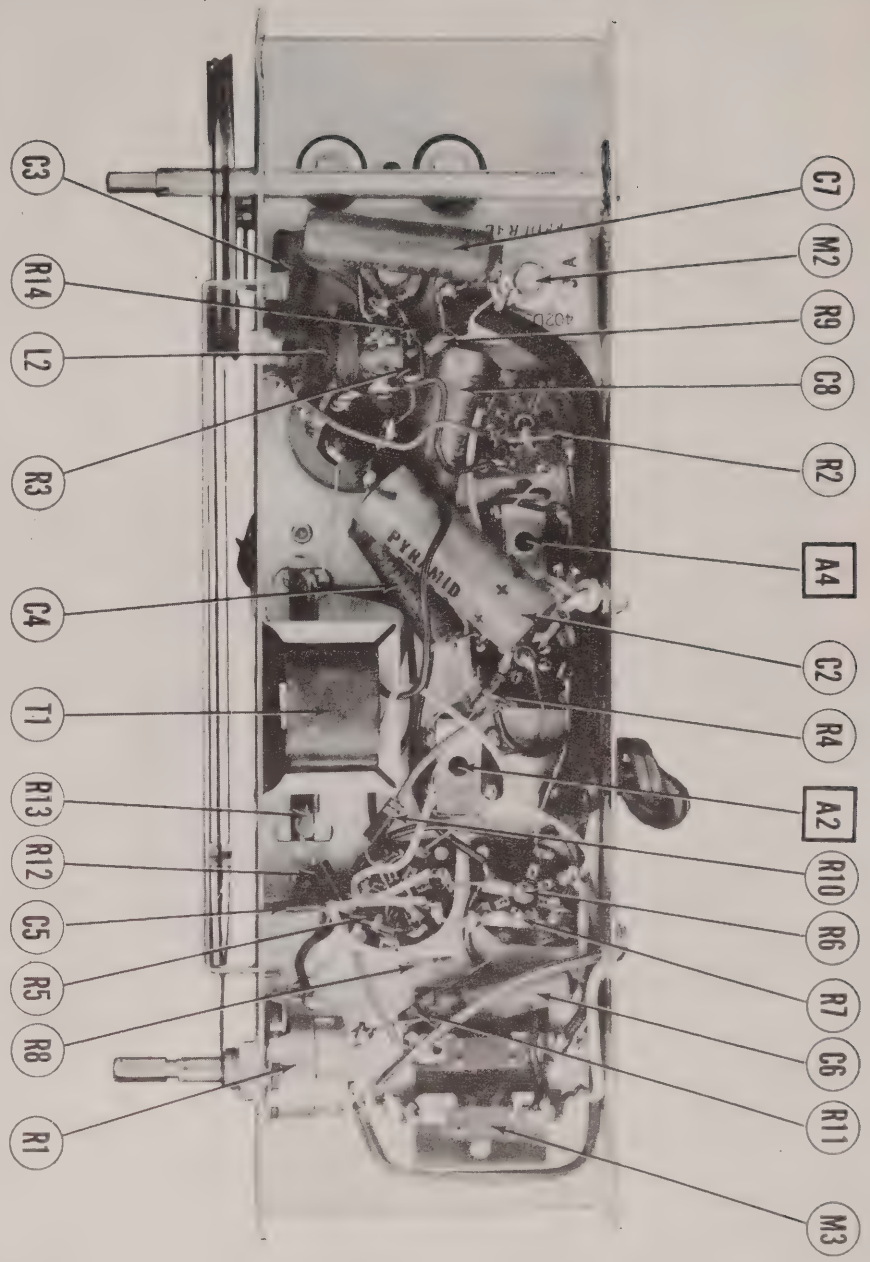
MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M3	Switch	RSW-058	AC/DC-Battery
M4	2 Gang. Var. Cap.	RCT-036	(26-498MMF, 19-190MMF)
	Cabinet	RAU-308	
	Knob	RDK-136	
	Dial Pointer	RDP-047	

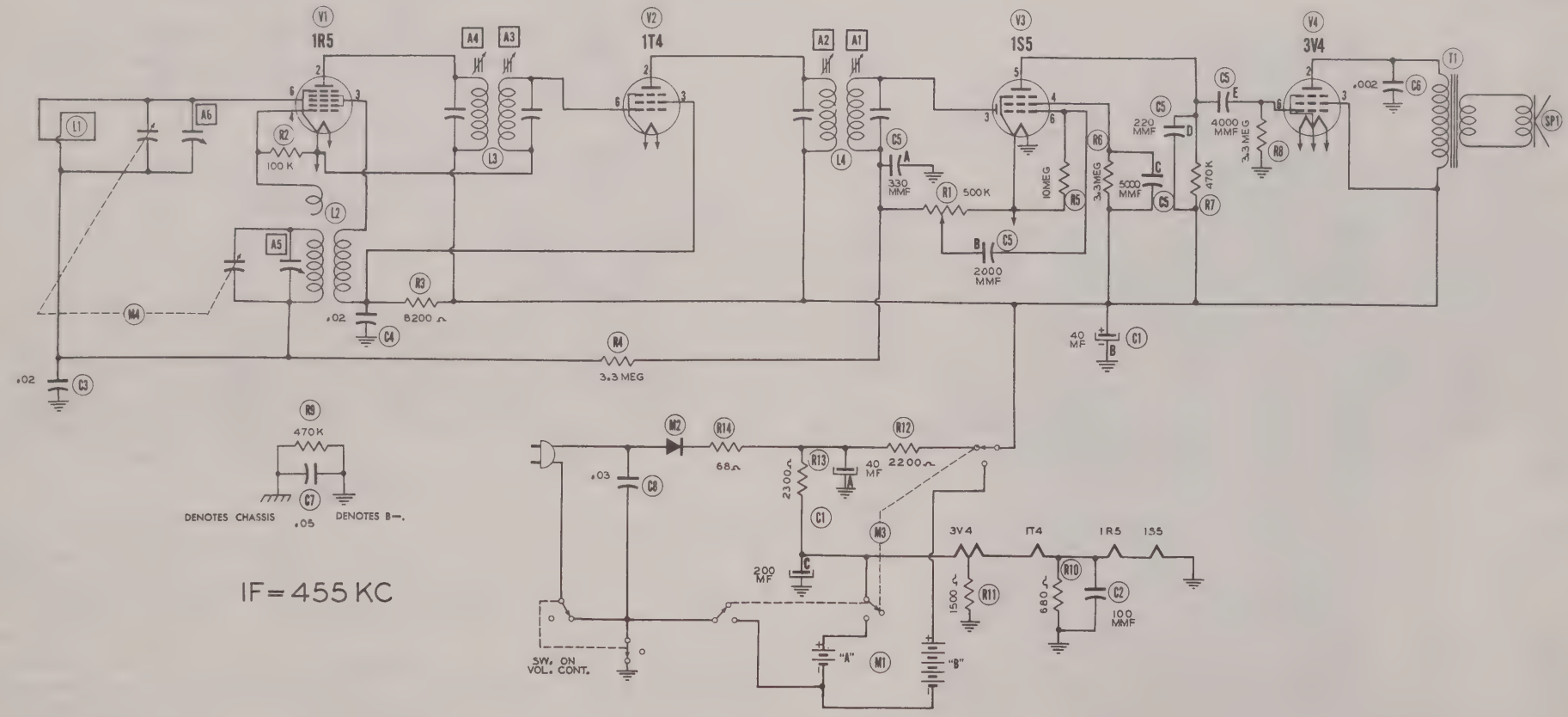


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 143



IF = 455 KC

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.6VDC	85VDC	60VDC	§-5.8VDC	1.6VDC	.1VDC	3.4VDC
V 2	1T4	3.4VDC	85VDC	60VDC	.1VDC	3.4VDC	1.6VDC	5.3VDC
V 3	1S5	1.6VDC	0V	.4VDC	15VDC	20VDC	0V	0V
V 4	3V4	5.3VDC	83VDC	87VDC	0V	6.5VDC	0V	8.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.2KΩ	†10.5KΩ	100KΩ	*	3.8Meg.	*
V 2	1T4	*	†2.2KΩ	†10.5KΩ	3.3Meg.	*	35Ω	*
V 3	1S5	*	0Ω	500KΩ	†3.3Meg.	470KΩ	10 Meg.	*
V 4	3V4	*	†3KΩ	†2.2KΩ	Inf.	*	3.3Meg.	*

† Measured from output of M2

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

KNIGHT
MODEL 93-370

KNIGHT
MODEL 93-370

KNIGHT MODEL 93-370

TRADE NAME	Knight Model 93-370
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Illinois
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES(SIX)	6SC7 Mic. Pre Amp., 6SC7 AF Amp., 6SC7 AF Amp.-Phase Inverter, (2) 6L6G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-130 Volts AC RATING: .88 Amp. @ 117 Volts AC

INPUTS

THIS AMPLIFIER HAS ONE PHONO AND TWO MICROPHONE INPUTS AND IS DESIGNED FOR ANY HIGH IMPEDANCE MICROPHONE OR PHONO PICKUP. SHIELDED CABLE ONLY SHOULD BE CONNECTED TO THE INPUT CIRCUITS REGARDLESS OF LENGTH. THIS CABLE SHOULD PREFERABLY BE SINGLE CONDUCTOR SHIELDED MICROPHONE CABLE OF GOOD QUALITY WITH OUTER PLASTIC JACKET. ALL THREE CHANNELS MAY BE INTER-MIXED SIMULTANEOUSLY IF SO DESIRED.

OUTPUT CONNECTIONS

IF ONLY ONE 8Ω VOICE COIL SPEAKER IS USED, THE SPEAKER CONNECTING CABLE CONNECTING LEADS SHOULD BE SOLDERED TO TERMINALS 1 AND 4 OF THE PLUG SUPPLIED. IF TWO SPEAKERS ARE USED AT THE SAME TIME, LEADS OF THE CONNECTING CABLE OF ONE SPEAKER SHOULD BE CONNECTED TO TERMINALS 1 AND 3 OF ONE OF THE PLUGS, AND THE OTHER SPEAKER CONNECTED IN LIKE MANNER TO THE OTHER PLUG. THE STANDARD 3.2Ω VOICE COIL SPEAKERS MAY ALSO BE USED. FOR ONE SPEAKER USE THE 4Ω MATCH. WHEN TWO SPEAKERS OF ANY KIND ARE USED THEY SHOULD BE PROPERLY PHASED.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Pre Amp.	6SC7	6SC7	8S	
V2	AF Amp.	6SC7	6SC7	8S	
V3	AF Amp.-Phase Inverter	6SC7	6SC7	8S	
V4	Power Output	6L6G	6L6G	7AC	
V5	Power Output	6L6G	6L6G	7AC	
V6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AF4444J*	UP2222		EL-420*	◓ Filter
B	10	450			45*			■ Decoupling
C	10	450						▲ Decoupling
C2	8	450		PRS450/8	BR845		UT-8	Decoupling
C3	40	25		PRS25/50	BR502		TVA-7	Output Cathode Bypass
C4	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C5	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C6	250			1468-00025	5W5T25	GP2K-250	1FM-325	Audio Coupling
C7	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C8	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C9	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C10	50			1468-00005	5W5Q5		1FM-45	Tone Compensation
C11	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C12	.001	600		P688-001	GT6D1	GP2M-001	TM-21	Tone Compensation
C13	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C14	.05	600		P688-05	GT6S5		TM-15	Audio Coupling
C15	.05	600		P688-05	GT6S5		TM-15	Line Filter
C16	.05	600		P688-05	GT6S5		TM-15	Line Filter

* Parallel sections to obtain desired capacity.

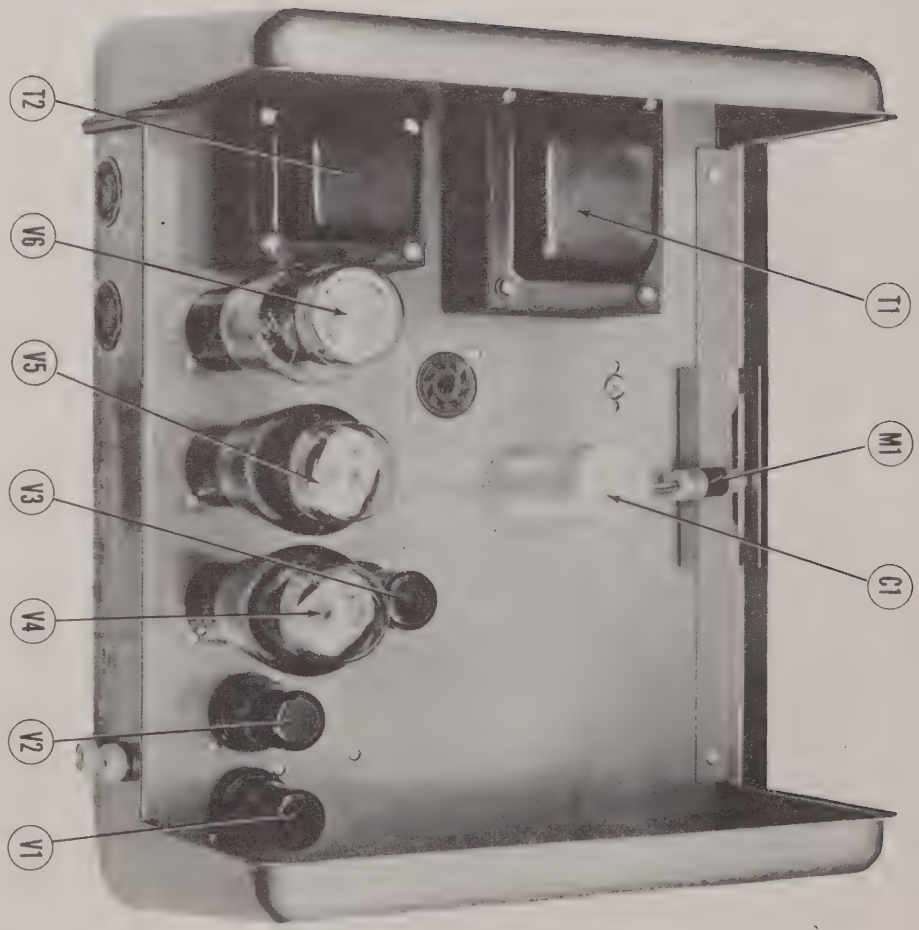
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	RP-504B	Q13-133	AM-60-Z	Microphone 1 volume control.
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
R2A	500KΩ	½	RP-504B	Q13-133	AM-60-Z	Microphone 2 volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions
R3A	500KΩ	½	RP-504W	Q13-133	AM-60-Z	Phono Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R3A per instructions
R4A	500KΩ	½	RP-504B	Q13-133	AM-60-Z	Tone control
B	Shaft		Not Req.	Not Req.	SW-A	Attach to R4A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
R5	100KΩ	½		BTS-100K	Tone Compensation
R6	10 Meg.	½		BTS-10 Meg.	Mic. Pre Amp. Grid
R7	220KΩ	½		BTS-220K	Mic. Pre Amp. Plate
R8	10 Meg.	½		BTS-10 Meg.	Mic. Pre Amp. Grid
R9	220KΩ	½		BTS-220K	Mic. Pre Amp. Plate
R10	1800Ω	½		BTS-1800	AF Cathode
R11	180KΩ	½		BTS-180K	AF Plate
R12	1.5 Meg.	½		BTS-1.5 Meg.	Tone Compensation
R13	1500Ω	½		BTS-1500	AF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	KNIGHT PART No.	IRC PART No.	
R14	470KΩ	½		BTS-470K	AF Plate
R15	10KΩ	½		BTS-10K	Phase Inv. Grid
R16	470KΩ	½		BTS-470K	Phase Inv. Plate
R17	470KΩ	½		BTS-470K	Output Grid
R18	470KΩ	½		BTS-470K	Output Grid
R19	200Ω	10		AB-250	Output Cathode Wire Wound
R20	7500Ω	10		AB-7500	Filter Wire Wound
R21	10KΩ	½		BTS-10K	Filter
R22	10KΩ	½		BTS-10K	Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .88A	670VCT .118ADC	5VAC @ 3A	6.3VAC @ 2.7A	LP-0198	P-6013	P-2953	PH-90

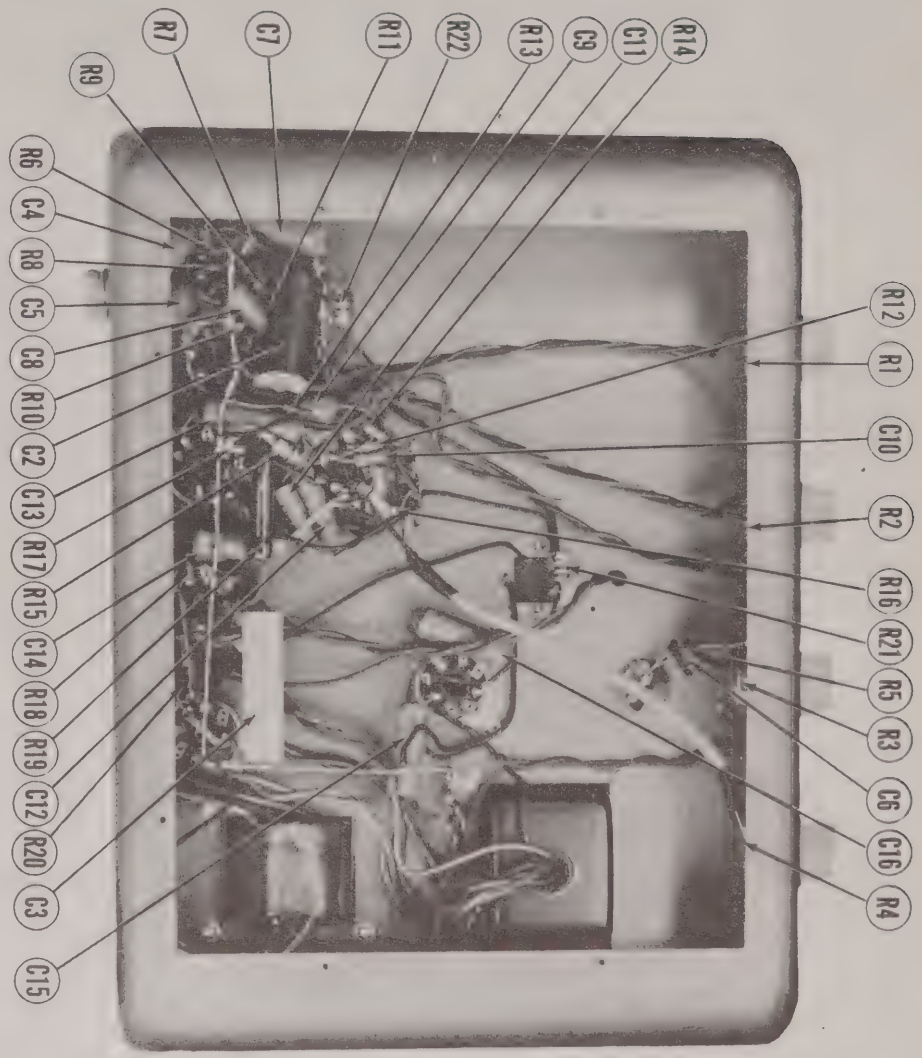
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8.3KΩ CT	4Ω 8Ω 16Ω 167Ω 250Ω 500Ω	200Ω CT	.22Ω .32Ω .44Ω 5.9Ω 7.7Ω 11.6Ω	LO-0093	A-3304 †	A-3128 †		† Drill new mounting holes.

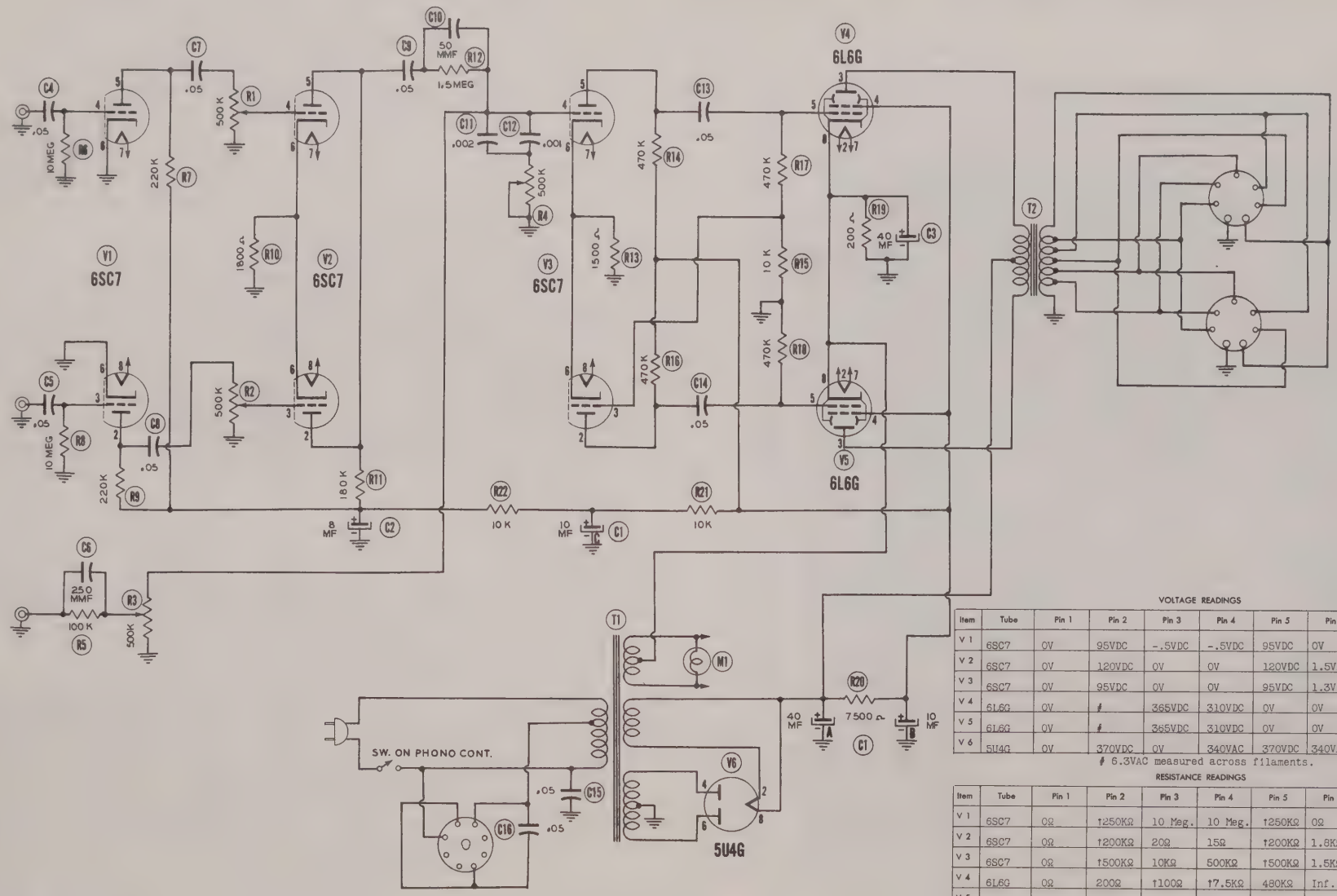
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					KNIGHT PART No.		
M1	Bayonet	6-8	.25	Blue			Type #44

CHASSIS—BOTTOM VIEW



KNIGHT MODEL 93-370



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0V	95VDC	-.5VDC	-.5VDC	95VDC	0V	#	#
V 2	6SC7	0V	120VDC	0V	0V	120VDC	1.5VDC	#	#
V 3	6SC7	0V	95VDC	0V	0V	95VDC	1.3VDC	#	#
V 4	6L6G	0V	#	365VDC	310VDC	0V	0V	#	25VDC
V 5	6L6G	0V	#	365VDC	310VDC	0V	0V	#	25VDC
V 6	5U4G	0V	370VDC	0V	340VAC	370VDC	340VAC	0V	370VDC

6.3VAC measured across filaments.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†250KΩ	10 Meg.	10 Meg.	†250KΩ	0Ω	200Ω	200Ω
V 2	6SC7	0Ω	†200KΩ	20Ω	15Ω	†200KΩ	1.8KΩ	200Ω	200Ω
V 3	6SC7	0Ω	†500KΩ	10KΩ	500KΩ	†500KΩ	1.5KΩ	200Ω	200Ω
V 4	6L6G	0Ω	200Ω	†100Ω	†7.5KΩ	480KΩ	Inf.	200Ω	200Ω
V 5	6L6G	0Ω	200Ω	†100Ω	†7.5KΩ	470KΩ	Inf.	200Ω	200Ω
V 6	5U4G	Inf.	80KΩ	Inf.	73Ω	80KΩ	67Ω	Inf.	80KΩ

† Measured from pin 8 of V6.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 Volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

SERIES 700F 33/45
RECORD CHANGERS

FIGURE 1

GENERAL INFORMATION

The Series 700F 33/45 record changer is of the single-post type, featuring two-button and eccentric spindle cam record selection. It is designed to play automatically the standard 78 RPM record, the 33⅓ RPM Microgroove records and the new 45 RPM records, not intermixed. The last record will be repeated until the changer is turned off. The pickup arm support is so designed to prevent damage to the mechanism if the pickup arm is handled during any part of the change cycle.

Parts should be ordered from the manufacturer of the receiver using this changer.

SERIES 700F 33/45
RECORD CHANGERS

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DATE 11/49 SET #75 FOLDER #11

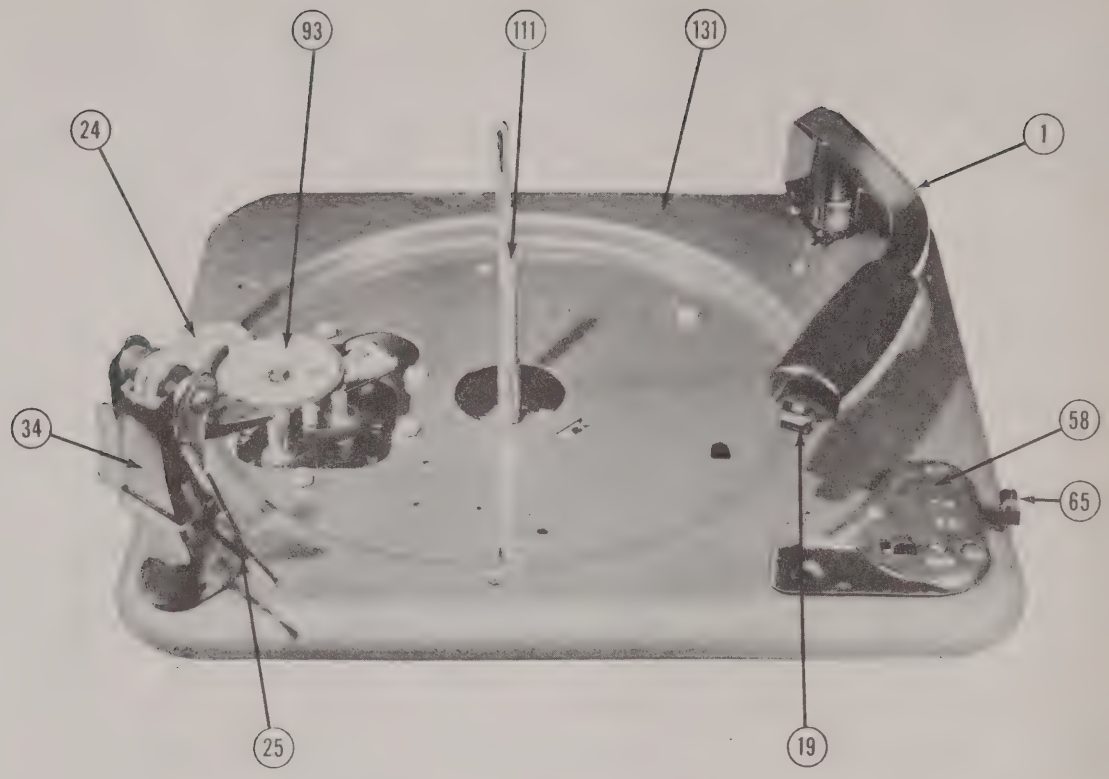

FIGURE 2

AUTOMATIC OPERATION

1. Raise the record stabilizer (24) to its vertical position.

2. Move the record support (34) toward the spindle for 10-inch records, and away from the spindle for 12-inch records. The record shelf (25) should be in the position as shown in Figure 2 for the 10-inch and 12-inch settings. To play 7-inch records move the record support (34) toward the spindle and place the record shelf (25) in the position as shown in Figure 1.

3. Place the records to be played on the spindle so they will rest on the record support (34) or the record shelf (25) and the eccentric (106) or step of the spindle.

4. Lower the record stabilizer to the record. The stabilizer is not used when 7-inch records are being played.

5. Move the speed control button (65) to the necessary position (45-78-33) to play the type of record on the spindle.

6. To play standard 78 RPM records it is necessary to pivot the cartridge to its correct position. This is done by turning the pivot knob (19) to the 78 position. To play the 33 RPM and 45 RPM records, pivot the cartridge clockwise to its correct position.

7. Move the "On-Off" switch (59) to the "On" position.

8. Pull the switch plate (58) in the direction indicated by the arrow. This sets the changing mechanism into operation, dropping the first record to the turntable. The changer will now play the entire stack of records and will continue playing the last record until the changer is shut off.

9. A record may be rejected at any time, while playing, by moving the switch plate (58).

10. To stop the changer, move the "On-Off" switch (59) to the "Off" position; raise the tone arm from the record and move it out to its rest position.

11. Remove the records from the turntable. *Caution:* Never try to remove records when changer is in middle of cycle; always allow changer to complete cycle.

MANUAL OPERATION

1. Raise the record stabilizer (24) to its vertical position.

2. Push the record support (34) into the 12-inch position.

3. Place the record to be played on the turntable.

4. Move the speed control button (65) to the position necessary to play the type record on the turntable.

5. Rotate the cartridge to its proper position.

6. Move the "On-Off" switch to the "On" position.

7. Lift the tone arm to disengage it from its rest, and place the pickup arm on the record.

8. At the end of the record the needle will follow the automatic trip groove of the record; therefore, starting the changing mechanism. Allow the changer to complete the cycle being careful not to allow the needle to strike the baseplate.

9. Raise the tone arm and move it out to its rest position, and move the switch (59) to the "Off" position.

FUNCTION OF LINKAGE FOR 78, 45 AND 33⅓ RPM OPERATION

The control lever (69) has two functions: To change the idler wheel speed and to change the weight of the tone arm, measured at the point of the stylus. In the 33 and 45 RPM position, link (63), Figure 3 is in such a position that the spring (54) is lax. In this position, the counterweight (64) is so adjusted on the back of the lift and sweep lever (78) that it gives between 4 and 9 grams needle pressure. The motor lever (80) of the control linkage (69) actuates an assembly on the motor which drives the idler wheel and in turn the turntable; thus giving the three speeds 78, 45 and 33⅓ RPM. When the control knob (65) of the control linkage (69) is moved to 78, link (63) pivots the spring lever toward the front of the base plate, placing forward pressure above the pivot point of the tone arm support (16) by means of spring (54), increasing the weight of the tone arm. When the control knob (65) is in the 45 and 33 position the spring lever is pivoted toward the back of the

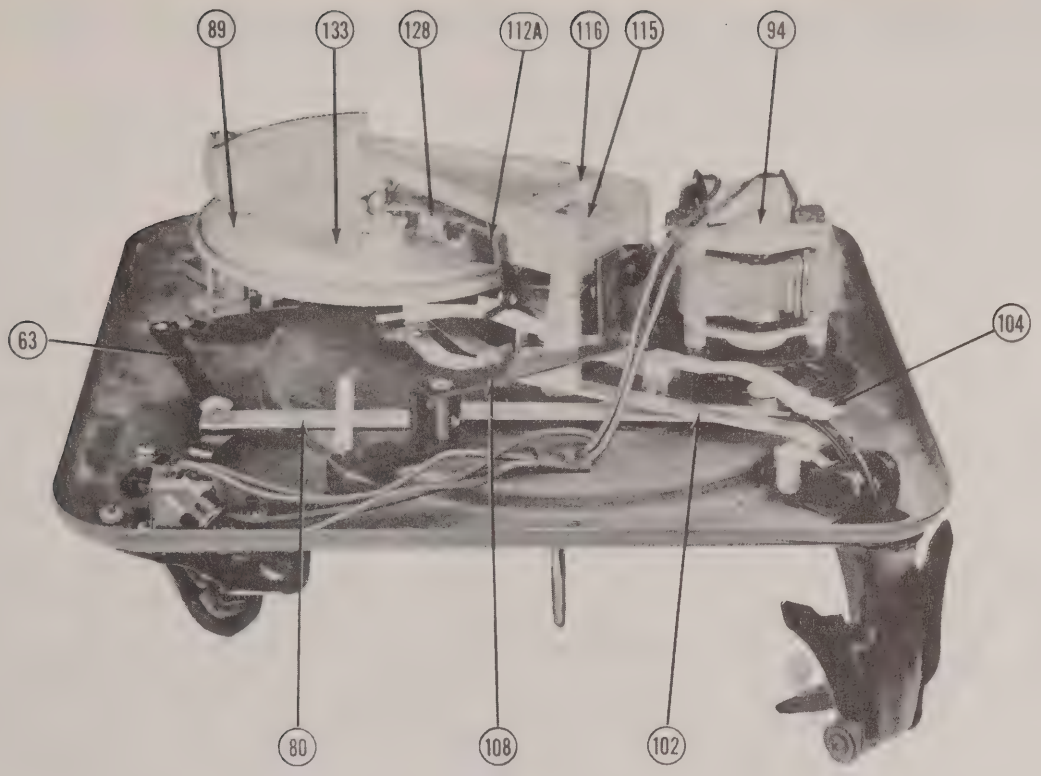

FIGURE 3

changer, thus decreasing the tone arm weight for long play and 45 RPM records.

CHANGE CYCLE

When the switch button (59) is moved to the "On" position, power is supplied to the motor, causing the turntable (132) to rotate. The automatic mechanism is then put into operation by moving the switch plate (58) in the direction indicated by the arrow. By this action the reject lever (108), which is connected to the switch plate (58), is pivoted against the trip plate and latch assembly (112), and in turn lifts the brass pinion (46). In this position the latch (112A) engages the top of the positioning bracket, thus holding the pinion in a raised position. As a result, the finger of the adjustable driving collar (134), which is fastened to the turntable hub, engages a projection on the brass pinion. This sets the pinion (46) and the cam (89) in rotation. A single revolution of the main cam performs all of the required change cycle function.

As the main cam rotates, the pin of the sweep lever (78) rides up the incline and into the groove of the cam. This action raises the tone arm and swings it out to clear the record. At this point the set-down position of the tone arm is determined. As the cam rotates the 7" frog (AA) of the main cam (89) comes in contact with the flat spring which is fastened to the base plate. This pivots the 7" frog outwardly. Therefore, if the record shelf (25) is in position to play 7-inch records, the spring tipped end of the 7" actuating lever (104) will be in a raised position, thus leaving the 7" frog in this outward position. This sets the cam track for 7-inch set-down. However, if 10-inch or 12-inch records are being played the spring tipped end of the 7" actuating lever will be in a lowered position, and upon contact the 7" frog will be pivoted inward which sets the cam track for 10" and 12" set-down.

The extended section of teeth of the main cam now engages and rotates the pinion (115), which in turn rotates the eccentric assembly (106), thus selecting and dropping a record to the turntable. After the record has been dropped, the wide portion on the cam moves away from the pinion. The eccentric is now aligned with the lower part of the spindle and is held in this position by the detent spring of the positioning bracket.

If the 7" frog has been set to play 7" records, the sweep lever pin will now move into the first groove of the cam, thus positioning the tone arm for 7" set-down. However, if the changer has been set for 10- and 12-inch records, the sweep lever pin will continue in the outer groove of the cam. If the record support (34) is in the 10" position, the spring tipped end of the 10" actuating assembly will be in a lowered position, which, as a result, pivots the selector frog (BB) outward upon contact. The sweep lever pin (78) now moves into the inner indexing track, moving the tone arm in and positioning it for 10-inch set-down. The end of the frog is designed so that when it comes in contact with the sweep lever pin it will be pivoted inward, setting the indexing track for 12-inch positioning. This operation is repeated in each change cycle; i.e., when the record support is in 10-inch position. However, when the record support (34) is in the 12-inch position, the actuating lever (102) is raised above the frog (BB), keeping the frog in position which leads to the 12-inch track.

The sweep lever pin (78) now rides down the incline of the main cam, lowering the tone arm to the record. The latch trip lever (133), which is mounted on the bottom of the cam strikes the latch (112A) of the trip plate and latch assembly (112) allowing the trip plate bumper to drop down to the rim of the cam. As the cam continues to rotate, the trip plate bumper drops into a recess in rim of the main cam, allowing the brass pinion to disengage from the driving collar (134), and also holding the cam in a locked position. This completes the change cycle.

VELOCITY TRIP

The velocity trip is composed of two major parts: The velocity trip assembly (75) and the vee lever (61). The vee lever (61) and the velocity trip assembly (75) work as a friction clutch. As the tone arm moves toward the center of the record, the sweep lever (78), comes into contact with one leg of the vee lever (61), causing the trip lever (75) to

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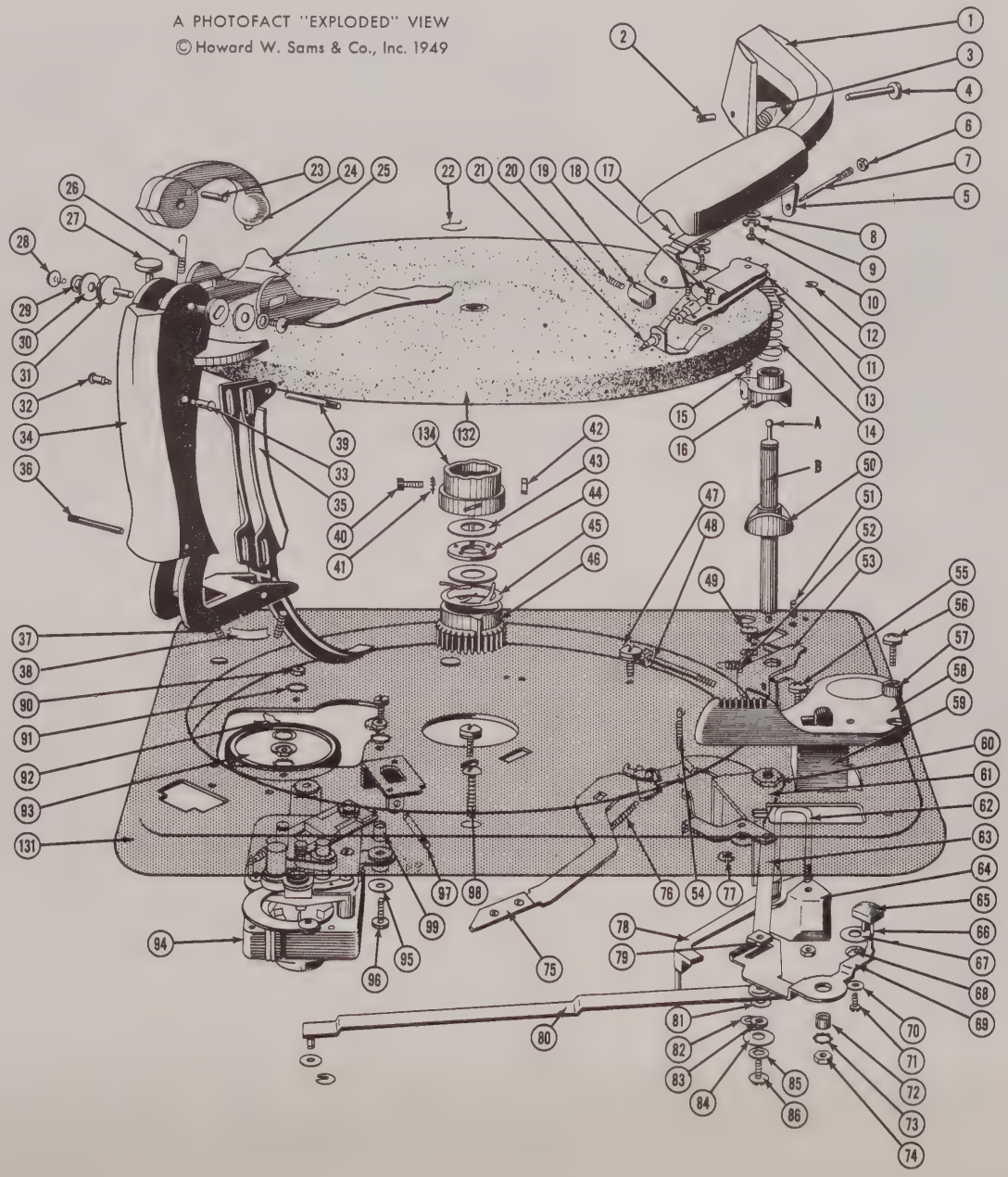

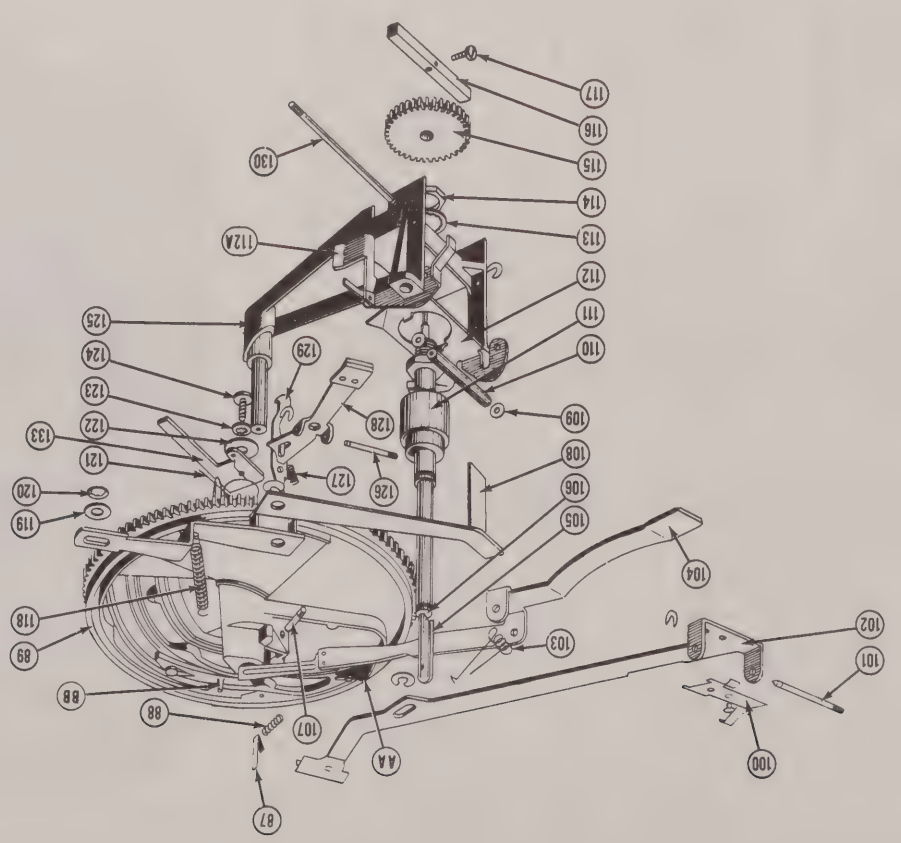
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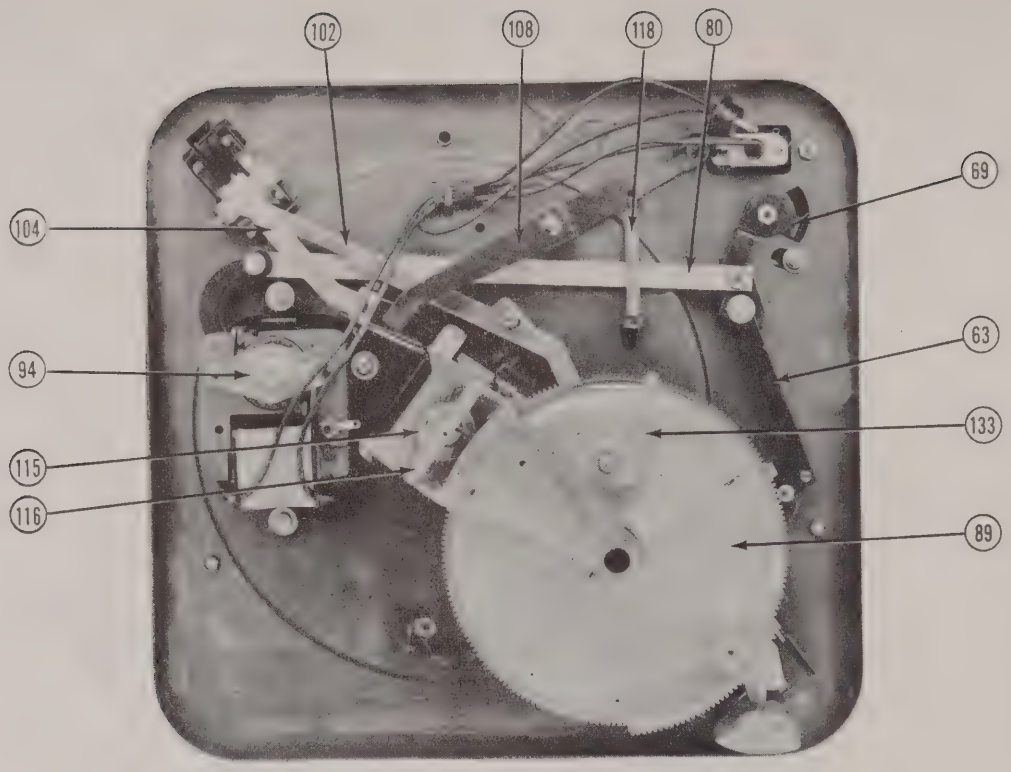


FIGURE 4

move toward the spindle. This inward movement of the trip assembly continues until the tip of the trip lever is in range of the finger on the adjustable collar (134). Once this position is attained, and as long as the movement of the needle toward the spindle is less than ⅛" per revolution, the tip of the trip lever will be pushed away from the spindle. This means that the friction clutch slips a corresponding amount; however, when the needle moves into the fast lead-in groove, the trip lever moves in rapidly allowing the Crescent lever of trip assembly (75) to slide behind the cam trip actuator (129). As a result, the next revolution of the collar (134) will force the trip lever (75) outward, causing the Crescent to push against the trip actuator (129) enough to unlatch the spring loaded actuator lever assembly (128) which in turn lifts the trip plate and latch assembly (112), causing the engagement of the pinion gear (46) and collar, thus starting a new change cycle. The actuating lever (128) is reset with the trip actuator (129) by the cam on the positioning bracket (125) as the cam revolves.

ADJUSTMENTS

Tone Arms Set-Down Point

The set-down point is adjusted by an eccentric pin (4), located in the tone arm. To check the adjustment, place a 10-inch record on the turntable, move the record support to the 10-inch position and turn the changer on. Observe the landing of the tone arm on the record. Turning the eccentric pin (4) gives the tone arm a slight horizontal movement. However, if a large adjustment is necessary, due to the looseness of the set screw in the sweep lever (78), the following adjustment is necessary. Remove the power plug, trip the changer by pulling on the switch plate (58). Rotate the turntable in a clockwise direction until the tone arm starts to drop to the record. At this point the sweep lever (78) is securely held by the 10-inch index groove in the main cam. Loosen the set screw located in the back of the sweep lever so the support rod (50B) is free to turn. Move the tone arm over the starting groove of the record and hold it in this position while tightening the set screw. A minor adjustment may now be made by the eccentric pin (4).

Tone Arm Height

When the tone arm is in proper adjustment, the needle should clear a stack of twelve 10-inch records. To vary the height of the tone arm, the ball tip on the tone arm support (50A) may be bent forward slightly to lower the tone arm, while bending the ball back lifts the tone arm.

If the tone arm is set too high to play the first record, turn the set screw (51), which is located directly behind the tone arm in the base plate, in a counterclockwise direction to lower the arm.

Record Support Adjustment

The record support (34) is adjusted correctly when a record is aligned with the lower part of the spindle (111) and the edge of the record clears the record support (34) by approximately 1/64"; i.e., with the record support in the correct position for the size of record to be played.

To vary the clearance for 10-inch records, adjust set screw (37), located on the bottom (left side) of the record support; for 12-inch records, adjust screw (37) (right side) of the record support.

To vary the clearance for 7-inch records proceed as follows:

a. Be sure the record support is adjusted properly for 10-inch records.

b. Place the record shelf (25) in position for 7-inch records.

c. Adjust the record shelf (25) by loosening the two screws (28).

d. Tighten screws after adjustment and check by dropping several records to the turntable.

Spindle Alignment

The eccentric cam (106) should be aligned with the lower part of the spindle (111) when the changer is out of cycle. To adjust, rotate the pinion (115) until the detent spring engages the flat on the pinion, loosen the set screws in the pinion, align the eccentric (106) with the spindle (111), and tighten the set screws.

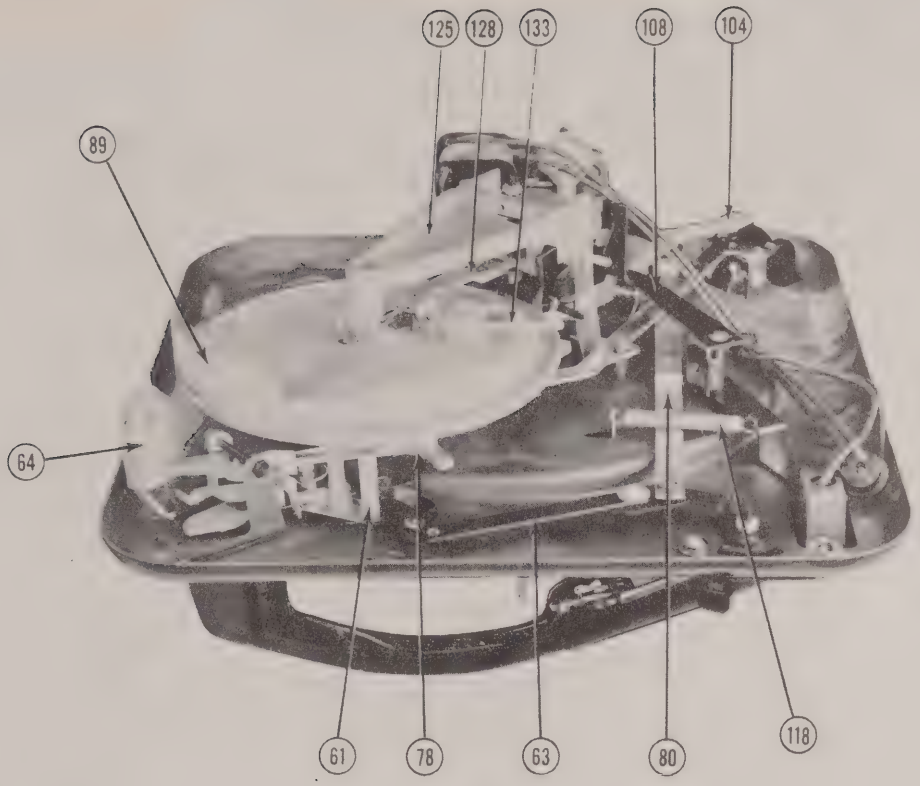


FIGURE 5

The spindle cap (105) should be in a position so that the slide is facing the center of the record support. To align the spindle cap, loosen the set screw (117), turn the spindle cap to its correct position, and tighten the set screw. There should be approximately .005" total vertical play in the spindle assembly to prevent binding.

Seven-Inch, Ten-Inch and Twelve-Inch Indexing Adjustment

At the start of each change cycle the seven-inch indexing frog is pushed to an outward position by a spring tab mounted on the base plate. If the record support and shelf is in position for 7-inch set-down, the 7-inch actuator assembly (104) will be in a raised position allowing the frog to stay in this outward position. Thus, setting the position for 7-inch set-down.

If the record support (34) is set for 10-inch position, the 7-inch frog will be moved inward by the 7-inch actuator assembly (104). This allows the pin of the lift and sweep lever assembly (78) to continue in the outer cam track. The 10-inch frog actuator assembly (102) will be in a lowered position which in turn pivots the selector frog (BB) outward. This sets the position for 10-inch set-down. The frog is so constructed that it will be reset in the 12-inch position each time the sweep lever pin goes past it. If necessary, the plate should be bent into the correct position to meet these requirements.

When the record support (34) is in the 12-inch position, the spring plate on the end of the actuating lever (102) is elevated so that it clears the frog (BB) by approximately 1/16-inch, leaving it in an inward position.

TROUBLES

Records Do Not Drop to Turntable When Changer Cycles

1. Check the thickness of the record.
2. Spindle out of alignment. See "Spindle Alignment" under Adjustments.
3. Check the record support for proper adjustment. See "Record Support Adjustment."
4. Pinion (115) may be loose on the eccentric shaft (106).

Two Records Drop at a Time

1. Check the thickness of the records. They should not be less than .070" at the center hole.
2. Check the slide in the spindle cap (105) for binding. The slide, when fully lowered, prevents more than one record from being dropped to the turntable. If slide is in a raised position during cycling, several records may drop at once.
3. Check the record support adjustment.

Failure to Trip

1. Spring (76) on the trip assembly (75) loose.
2. Velocity trip assembly (75) binding in an outward position.
3. Check the leg of the adjustable collar (134). Collar should be adjusted so that leg engages projection on drive pinion by at least 1/32".

Continuous Tripping

1. Check the leg on the adjustable collar (134). It should clear the drive pinion (46) by approximately 1/32"; i.e., when the fiber disc on the drive pinion is resting in the cutout in the main cam.
2. Check spring (45) to see if it is pushing the pinion down as the main cam returns to home position.
3. Check the velocity trip assembly (75) for binding.
4. Check the reject trip lever (108) for binding.
5. Check the changer to see if it is level. Tilting a changer may cause it to trip continuously.
6. Check the pinion (46) for binding.

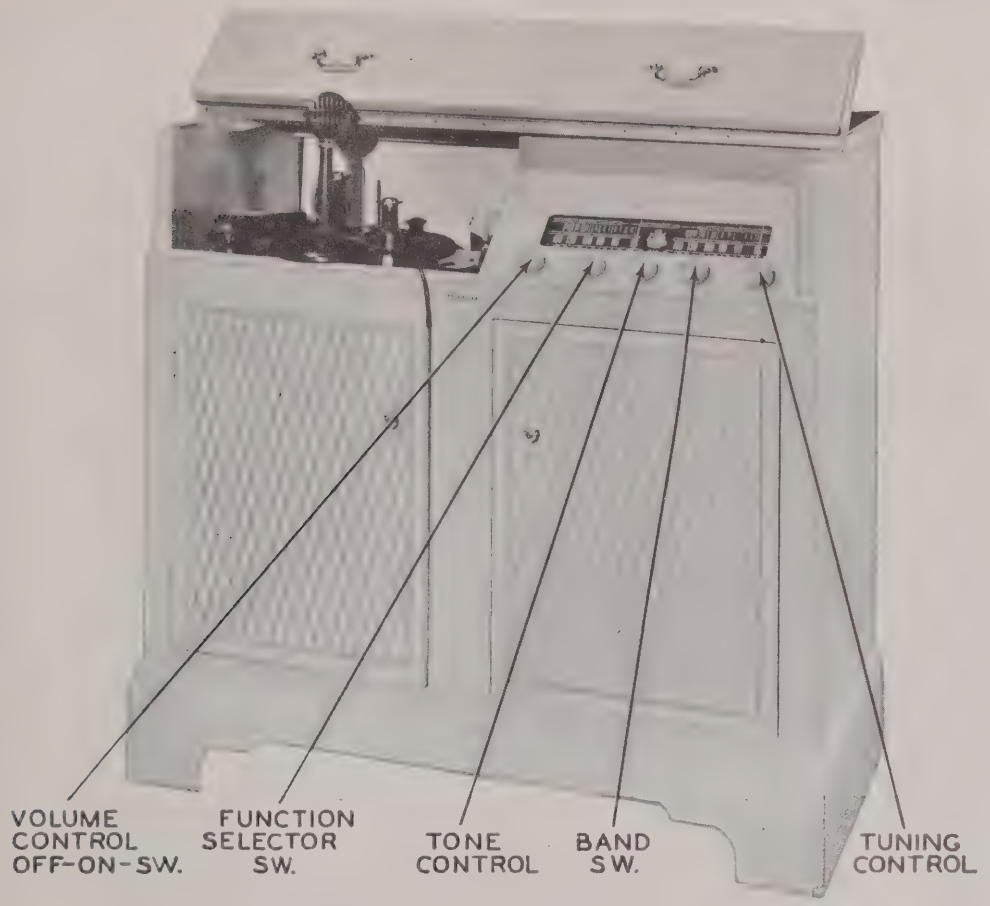
LUBRICATION

Factory lubrication should be sufficient for a long period of service; however, if it becomes necessary to lubricate, do so as follows:

Use light machine oil in all moving parts (where necessary), except the turntable shaft and pinion (46), main cam (89), and the detent of the pinion (115).

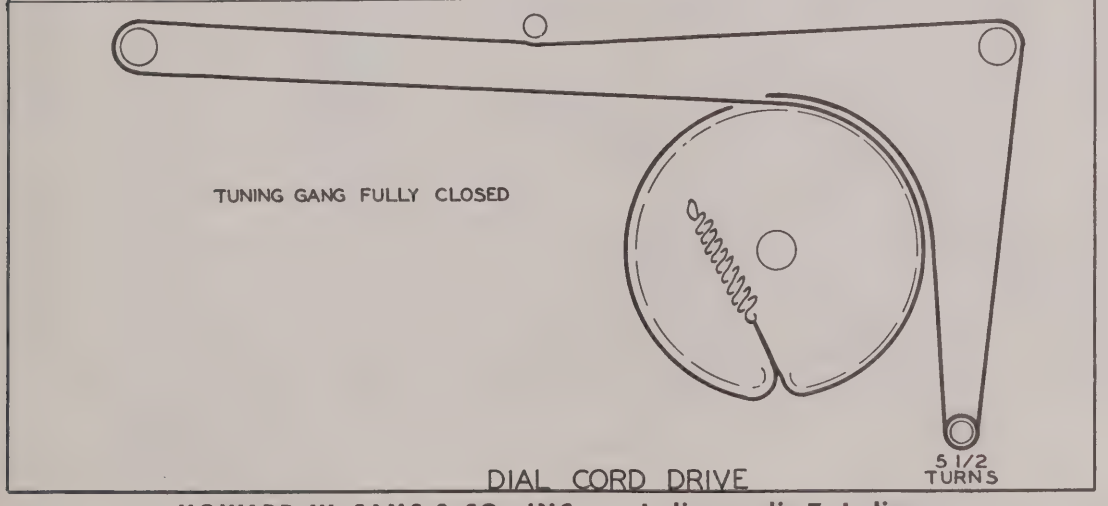
PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	69-75506	Tone arm
2	12-74597	Pin
3	33-74053	Spring
4	12-75361	Eccentric pivot pin
5	10-76407	Bracket
6	1047-A	Nut
7	12-75612	Screw stud
8	1697-W	Flat washer
9	1934-A	Lockwasher
10	1486-A	Screw
11	63-75770	Pickup
12	32-18893	"C" washer
13	32-74055	Washer
14	33-73340	Spring tone arm
15	1417-A	Screw
16	43-73113	Cam tone arm top
	43A76606	Tone arm support assembly includes item no. 12, 13, 14, 15, 16 and 50
17	33-76305	Spring
18	1432-A	Screw
19	39-76283	Button
20	2094-S	Set screw
21	10-76299	Pickup yoke
22	33-73610	Retaining clip
23	12-73120	Pin
24	55-73613	Stabilizer
25	62-76353	Record shelf
26	33-73349	Spring
27		Pin 7" set-down
28	9261	Screw
29	1905-U	Lockwasher
30	32-76517	Washer
31	12-76320	Spacer stud
32	12-74843	Stud-record support
33	12-74843	Stud-record support
34	62-74536	Record support
35	55-74853	Actuator
36	12-79846	Pin-record support actuator
37	2087-S	Set screw
38	33-74543	Spring lock
39	12-76338	Drive pin
40	9214	Screw
41	1906-C	Lockwasher
42	1022-A	Nut
43	32-72485	Washer
44	30A72491	Thrust bearing assembly
45	33-75952	Spring
46	28-76344	Pinion
47	1333-A	Screw
48	9255	Tone arm hinge bolt
49	9264	Screw
50	43A76606	Tone arm supp. and cam assembly (see item 16)
51	2073-Z	Set-screw
52	33-76556	Counterbalance spring
53	10A76559	Tone arm hinge bracket assembly
54		Spring
55		Screw
56	1399-Y	Screw
57	65-73144	Sleeve
58	10-76413	Switch plate
59	58-73096	Switch
	4-73837	Insulator
	7-78834	Shield
60		Hex nut
61	55-76323	Vee lever
62	9249	"U" bolt
63	41-76395	Link
64	26-75645	Counterbalance
65	39-75519	Button
66	33-75617	Spring
67	1637-A	Washer
68	1905-A	Lockwasher
69	55A76533	Motor actuating lever assembly
70		Flat washer
71	1346-A	Screw
72	65-76389	Spacer
73	1905-A	Lockwasher
74	1022-A	Nut
75	55A76365	Velocity trip assembly
76	33-76430	Spring-Crescent
77	32-16901	"C" washer
78	55A73045	Lift and sweep lever assembly
79	9258	Nut
80	55A76427	Motor lever assembly
81	1637-A	Washer
82		Flat washer
83		Hex nut
84	1637-A	Washer
85	1905-A	Lockwasher
86	1346-A	Screw
87	33-75136	Spring
88	33-73577	Spring
89	43A76446	Main cam assembly
90	1022-A	Nut
91	1906-C	Lockwasher
92	32-75780	Clip
93	28A75782	Idler wheel assembly
94	56-76507	Motor—3 speed
95	1609-A	Washer
96	1479-A	Screw
97	12-74014	Pin-hinge bracket lever
98	9177	Mounting screw
99	65-72058	Spacer
100	33-75429	Spring
101	12-73007	Pin
102	55A74605	10" frog actuator assembly
103	33-76568	Spring
104	55A74910	7" actuator assembly
105	21A73601	Spindle cap assembly
106		Eccentric spindle
107	12-75139	Pin-cam trip actuator
108	55-76347	Reject lever
109	1637-A	Washer
110	65-76547	Spacer sleeve
111	19A76477	Spindle assembly
112	55A76317	Trip plate and latch assembly
113	1932-C	Lockwasher
114	1042-A	Nut
115	28-76467	Pinion
116	32-73301	Retainer-spindle cap rod
117	1344-A	Screw
118		Reject return spring
119	1602-A	Washer
120	32-76471	Springrip washer
121	33-76433	Spring
122	1609-A	Washer
123		Lockwasher
124	1495-A	Screw
125	10-73037	Positioning bracket
126	12-73568	Pin-actuator lever
127	33-73577	Spring
128	55A74813	Actuator lever assembly
129	55-75142	Cam trip actuator
130	12-73008	Pin-hinge
131	57A76438	Motorboard assembly
132	66A75028	Turntable assembly
133	55-76392	Latch-trip lever



PACKARD-BELL MODEL 1181

TRADE NAME	Packard-Bell, Models 1181, 1181A
MANUFACTURER	Packard-Bell Co., 3443 Wilshire Blvd., Los Angeles, California
TYPE SET	AC Operated Combination Phono-Recorder-Radio, AM-FM Superheterodyne Receiver with Loop Antenna
TUBES(TWELVE)	Types 6BA6 RF Amp., 6BA6 Mixer, 6AU6 Oscillator, 6BA6 1st IF Amp., 6BA6 2nd FM IF Amp., 6AL5 Ratio Detector, 6H6 DET-AVC, 6U5 Tuning Indicator, 6SQ7 1st AF Amp., 6SK7 2nd AF Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING: .79 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 87.5-108.5MC



DIAL CORD DRIVE

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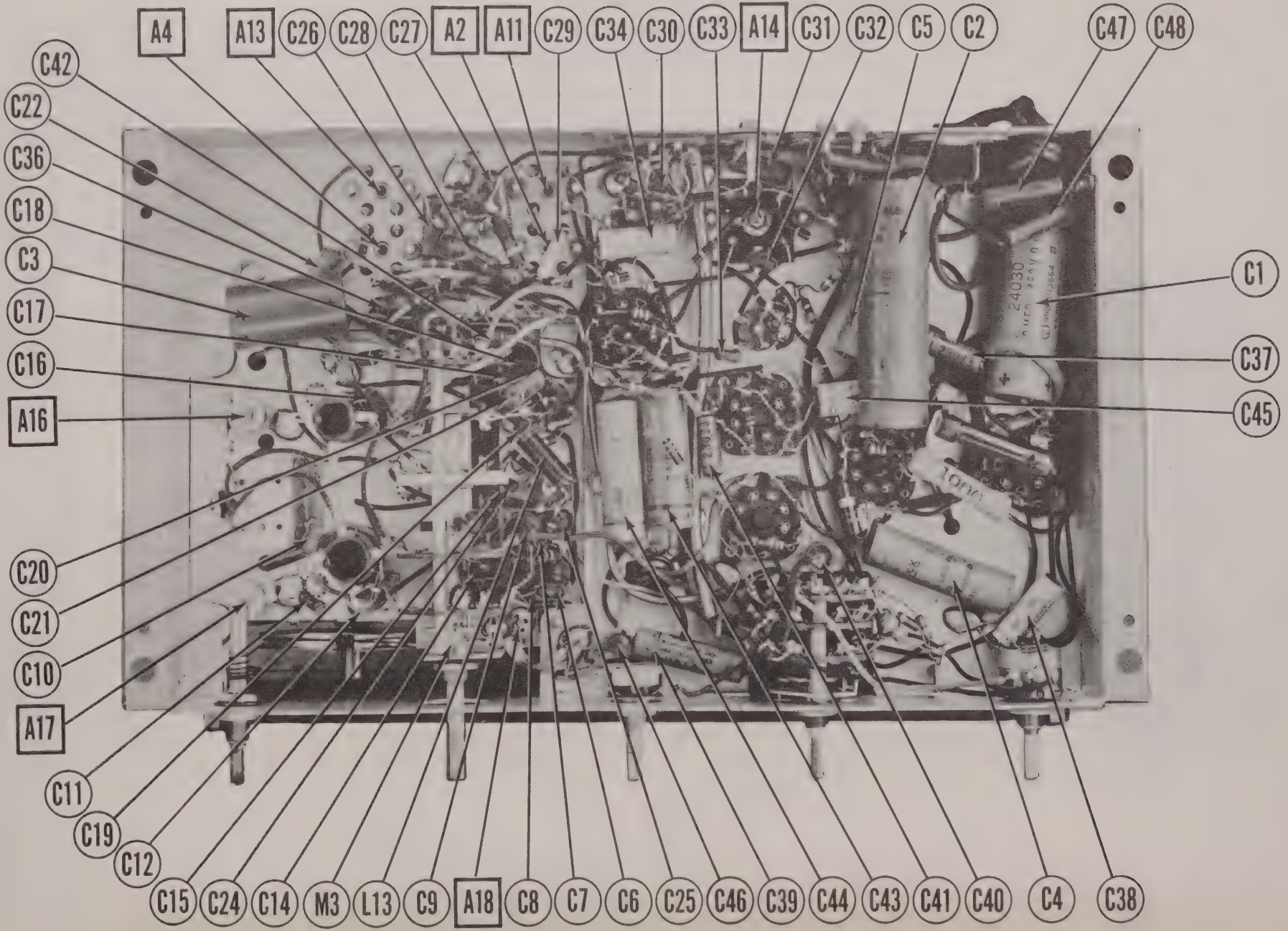
DATE 11/49 SET #75 FOLDER #12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R30
R28
R34
R50
R29
R65
R33
R32

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Mixer	6BA6	6BA6	7BK	
V3	Oscillator	6AU6	6AU6	7BK	
V4	1st IF Amp.	6BA6	6BA6	7BK	
V5	2nd FM IF Amp.	6BA6	6BA6	7BK	
V6	Ratio Detector	6AL5	6AL5	6BT	
V7	Detector-AVC	6H6	6H6	7Q	
V8	Tuning Indicator	6U5	6U5	6R	
V9	1st AF Amp.	6SQ7	6SQ7	8Q	
V10	2nd AF Amp.	6SK7	6SK7	8N	
V11	Power Output	6V6GT	6V6GT	7AC	
V12	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	40	450	24030	PRS450/40	BR4045		UT-40	Filter
C2	40	350	24004B-1	PRS450/40	BR4045		UT-40	Filter
C3	20	350	24012	PRS350/24	BR2045		UT-203	Filter
C4	25	25	24006	PRS25/25	BR252A		TA-25	Output Cath. Bypass
C5	5	50	24038	PRS150/4	BR550		TVA-13	Stabilizing Cap.
C6	220		23915	1468-0002	5W5T2	GP2K-220	1FM-32	RF Coupling
C7	47		23912	1468-00005	5W5Q5	GP1K-47	1FM-45	RF Cath. Bypass
C8	470		23916	1468-0005	5W5T5	GP2K-470	1FM-35	RF Fil. Bypass
C9	5000		23931	1467-005	1D5D5	811-005	29C1	RF Screen Bypass
C10	5		23908	1468-000005	5W5V5	NP0K-5	MS-55	RF Coupling
C11	51		23912	1469-00005	5R5Q5	NP0M-50	MS-45	Fixed Trimmer
C12	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	RF Plate Decoupling
C13	220		23915	1468-0002	5W5T2	GP2K-220	1FM-32	RF Coupling
C14	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	RF Plate Decoupling
C15	51		23912	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Coupling
C16	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C17	10		23923	1469-00001	5R5Q1	NP0K-10	MS-41	Fixed Trimmer
C18	5000		23931	1467-005	1D5D5	811-005	29C1	Mixer Screen Bypass
C19	470		23916	1468-0005	5W5T5	GP2K-470	1FM-35	Mixer Fil. Bypass
C20	47		23912	1468-00005	5W5Q5	GP1K-47	1FM-45	Mixer Cath. Bypass
C21	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Mixer Cath. Bypass
C22	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Mixer Plate Decoupling
C23	470		23916	1468-0005	5W5T5	GP2K-470	1FM-35	RF Bypass
C24	51		23912	1468-00005	5W5Q5	GP1K-50	1FM-45	Osc. Grid Cap.
C25	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Osc. Plate Bypass
C26	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter
C27	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	1st IF Screen Byp.
C28	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	1st IF Plate Dec.
C29A	100		Note 1	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
B	100		Note 1	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C30	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	2nd IF Screen Bypass
C31	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	2nd IF Plate Decoupling
C32	220		23915	1468-0002	5W5T2	GP2K-220	1FM-32	Diode Load Cap. Note 2
C33	220		23915	1468-0002	5W5T2	GP2K-220	1FM-32	Diode Load Cap. Note 2
C34	.003	600	23016	P688-003	GT6D3	GP2M-003	TM-23	De-emphasis
C35	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	AVC Filter Note 3
C36	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C37	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	AF Feedback
C38	.003	600	23016	P688-003	GT6D3	GP2M-003	TM-23	Voltage Divider
C39	.1	200	23019	P288-1	GT2P1		TM-1	Bias Filter
C40	.1	200	23019	P288-1	GT2P1		TM-1	Audio Coupling
C41	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C42	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C43	.2	400	23020	P488-22	GT4P2		TC-2	2nd AF Screen Bypass
C44	.2	400	23020	P488-22	GT4P2		TC-2	Decoupling
C45	.02	600	23007	P688-02	GT6S2		TM-12	Audio Coupling
C46	.01	500	23023-1	P688-01	GT6S1	GP2-335-01	TM-11	Tone Compensation
C47	.01	125AC	23932	P688-01	GT6S1		TM-11	Line Filter
C48	.01	125AC	23932	P688-01	GT6S1		TM-11	Line Filter

Note 1. Items C29A, C29B and R23 are combined into one unit.
Note 2. When either item C32 or C33 are replaced, replace both with capacitors of equal value.
Note 3. Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ .79A	630VCT .058ADC	5VAC @ 2A	6.3VAC @ 3.9A	89024	P-4079 *†	P-3151 †	PV-70A*†

* Drill new mounting holes.
† Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	5700Ω	3.9Ω	570Ω	.7Ω	89409	A-3825	A-2904 ‡	RO-9	‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.9Ω	83703	ST-119 # MOD.P10-T	10A31	# Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
SP2	9 3/4"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	Loop Ant.	0Ω				Three turns around cabinet.
L2	AM Ant.	6Ω		29400C		
L3	FM Ant.	0Ω		29409		
L4	RF Choke	.1Ω		29104		
L5	AM RF	86Ω	5.3Ω	29102F	14-1057	
L6A	FM RF	0Ω		29109		
B	FM Osc.	0Ω				
L7	AM Osc.	1Ω	5.9Ω	29205C	14-1060	
L8	FM 1st IF	1Ω	1Ω	29020		
L9	AM 1st IF	11Ω	11Ω	29021	16-6678	
L10	FM 2nd IF	1.8Ω	.6Ω	29022A		
L11	AM 2nd IF	11Ω	11Ω	29023	16-6678	
L12	Ratio Det. Trans.	1.5Ω	.1Ω	29018		
L13	Fil. Choke	.1Ω				

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PACKARD-BELL PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.25	Blue	54002-1		Type #44
M2	Bayonet	6-8	.25	Blue	54002-1		Type #44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: PACK.-BELL PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
M3		LT3-M	

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD-BELL PART No.	NOTES
M4	Switch	86017C	AM-FM
M5	Switch	86009B	Function
M6	3 Gang. Var. Cap.	23525	(45-495MMF) Each Section
A5	Trimmer	23412	BC Osc. Adj.
A6, A8	Dual Trimmer	23400	BC RF Adj. / BC Ant. Adj.
A7	Padder	23402	BC Osc. Adj.
A15	Trimmer	23406	FM Osc. Adj.
A16	Trimmer	23408	FM RF Adj.
A17	Trimmer	23408	FM Ant. Adj.

PARTS LIST AND DESCRIPTIONS (Continued)

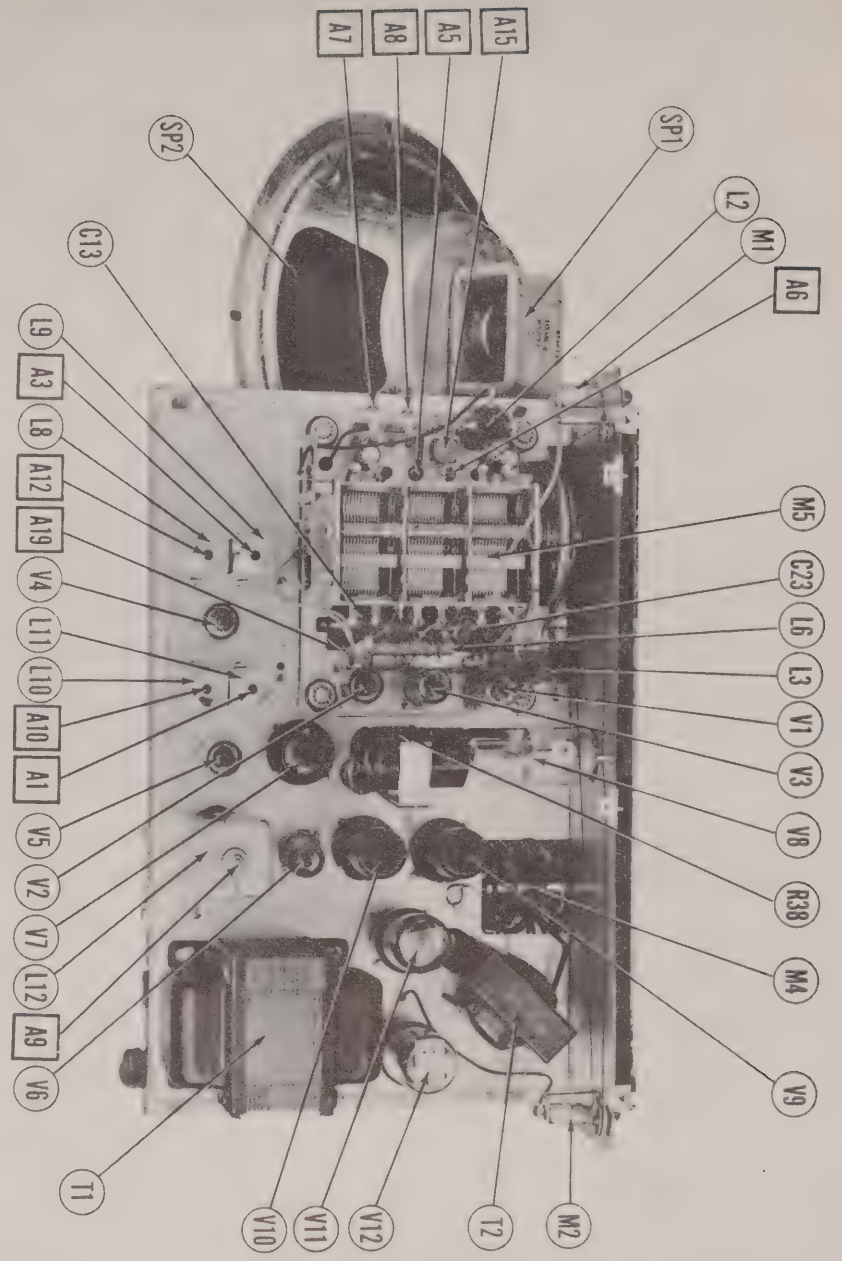
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	PACK.-BELL PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	3 Meg.	½	25017A	Q13-140	M-67-Z	Volume control
B	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2	3 Meg.	½	25509	Q13-140	M-67-Z	Tone control

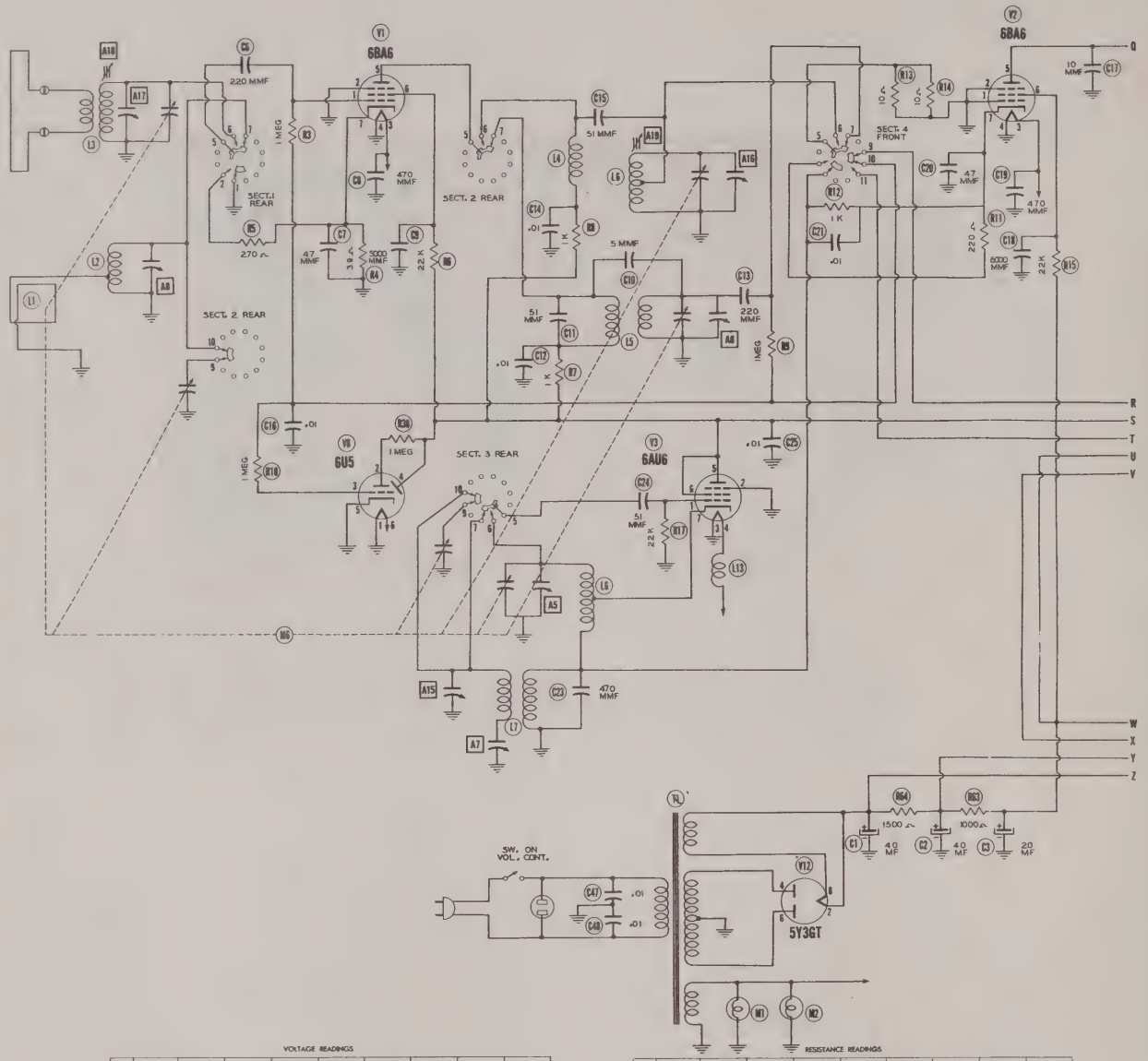
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD-BELL PART No.	IRC PART No.	
R3	1 Meg.	½	73053	BTS-1 Meg.	RF Grid
R4	39Ω	½	73008	BW-½-39	RF Cathode
R5	270Ω	½	73018	BW-½-270	RF Cathode
R6	22KΩ	½	73041	BTS-22K	RF Screen
R7	1000Ω	½	73025	BTS-1000	RF Plate Decoupling
R8	1000Ω	½	73025	BTS-1000	RF Plate Decoupling
R9	1 Meg.	½	73053	BTS-1 Meg.	AVC Network
R10	1 Meg.	½	73053	BTS-1 Meg.	AVC Network
R11	220Ω	½	73017	BW-½-220	Mixer Cathode
R12	1000Ω	½	73025	BTS-1000	Mixer Cathode
R13	10Ω	½	73001		Parasitic Supp.
R14	10Ω	½	73001		Parasitic Supp.
R15	22KΩ	½	73041	BTS-22K	Mixer Screen
R16	1000Ω	½	73025	BTS-1000	Mixer Plate Decoupling
R17	22KΩ	½	73041	BTS-22K	Osc. Grid
R18	100KΩ	½	73047	BTS-100K	AVC Network
R19	180Ω	½	73016	BW-½-180	1st IF Cathode
R20	10KΩ	1	73073	BTA-10K	1st IF Screen
R21	1000Ω	½	73025	BTS-1000	1st IF Plate Decoupling
R22	2.2 Meg.	½	73055	BTS-2.2 Meg.	AVC Network
R23	47KΩ	½	Note 1	BTS-47K	Diode Filter
R24	100KΩ	½	73047	BTS-100K	AVC Network
R25	56KΩ	½	73060	BTS-56K	Tone Compensation
R26	1000Ω	½	73025	BTS-1000	Tone Compensation
R27	120Ω	½	73014	BW-½-120	2nd FM IF Cathode
R28	22KΩ	½	73041	BTS-22K	2nd FM IF Screen
R29	1000Ω	½	73025	BTS-1000	2nd FM IF Plate Decoupling
R30	120Ω	½	73014	BW-½-120	Balancing
R31	27KΩ	½	73042	BTS-27K	De-emphasis
R32	6800Ω	½	73035	BTS-6800	Ratio Det. Diode Load
R33	6800Ω	½	73035	BTS-6800	Ratio Det. Diode Load
R34	100KΩ	½	73047	BTS-100K	AVC Network
R35	220KΩ	½	73049	BTS-220K	Diode Load
R36	470KΩ	½	73051	BTS-470K	Diode Load
R37	4.7 Meg.	½	73057	BTS-4.7 Meg.	Bias Network
R38	1 Meg.	½	73053	BTS-1 Meg.	Tuning Ind. Plate
R39	100KΩ	½	73047	BTS-100K	Tone Compensation
R40	56KΩ	½	73060	BTS-56K	Tone Compensation
R41	1 Meg.	½	73053	BTS-1 Meg.	Voltage Divider
R42	22KΩ	½	73041	BTS-22K	Feedback
R43	4.7 Meg.	½	73057	BTS-4.7 Meg.	1st AF Grid
R44	100KΩ	½	73047	BTS-100K	Voltage Divider
R45	68KΩ	½	73046	BTS-68K	1st AF Plate
R46	100KΩ	½	73047	BTS-100K	Tone Compensation
R47	4.7 Meg.	½	73057	BTS-4.7 Meg.	2nd AF Grid
R48	68Ω	½	73011	BW-½-68	2nd AF Cathode
R49	220KΩ	½	73049	BTS-220K	2nd AF Plate
R50	2.2 Meg.	½	73055	BTS-2.2 Meg.	2nd AF Screen
R51	56KΩ	½	73060	BTS-56K	Decoupling
R52	470KΩ	½	73051	BTS-470K	Output Grid
R53	270Ω	1	73074	BW-1-270	Output Cathode
R54	39Ω	½	73008	BW-½-39	Feedback
R55	68KΩ	½	73046	BTS-68K	Tone Compensation
R56	100KΩ	½	73047	BTS-100K	Tone Compensation
R57	180Ω	½	73016	BW-½-180	Feedback
R58	22Ω	½	73005	BW-½-22	Feedback
R59	1500Ω	½	73027	BTS-1500	Feedback
R60	1 Meg.	½	73053	BTS-1 Meg.	Tone Compensation
R61	330KΩ	½	73050	BTS-330K	Tone Compensation
R62	1 Meg.	½	73053	BTS-1 Meg.	Tone Compensation
R63	1000Ω	5	73015	AB-1000	Filter Wire Wound
R64	1800Ω	10	73018	AB-1800	Filter Wire Wound
R65	18Ω	1	73003	BW-1-18	Cutter Load Wire Wound
R66	27KΩ	½	73042	BTS-27K	Voltage Divider

Note 1. Item C29A, C29B and R23 are combined into one unit.



DATE 11/49 SET #75 FOLDER #12



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6BA6	-.1VDC	0V	6.3VAC	0V	165VDC	100VDC	2.5VDC	
V2	6BA6	-.1VDC	0V	6.3VAC	0V	165VDC	125VDC	6.5VDC	
V3A	6AU6	§-17VDC	0V	6.3VAC	0V	170VDC	170VDC	0V	
‡ V3B	6AU6	§-.6VDC	0V	6.3VAC	0V	160VDC	160VDC	0V	
V4	6BA6	+2VDC	0V	0V	6.3VAC	162VDC	100VDC	2.1VDC	
‡ V5	6BA6	0V	0V	0V	6.3VAC	150VDC	85VDC	1.4VDC	
‡ V6	6AL5	0V	0V	0V	6.3VAC	.5VDC	0V	-.4VDC	
V7	6H6	0V	0V	0V	55VDC	-.6VDC	0V	6.3VAC	0V
V8	6U5	6.3VAC	39VDC	.7VDC	170VDC	0V	0V		
V9	6SQ7	0V	-.5VDC	0V	0V	0V	45VDC	6.3VAC	0V
V10	6SK7	0V	0V	0V	-.6VDC	0V	6.8VDC	6.3VAC	57VDC
V11	6V6GT	0V	0V	290VDC	235VDC	0V	290VDC	6.3VAC	11VDC
V12	5Y3GT	0V	315VAC	55VDC	320VAC	175VDC	320VAC	0V	315VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6BA6	3.3Meg.	0Ω	.1Ω	0Ω	13.5KΩ	12.5KΩ	270Ω	
V2	6BA6	3.3Meg.	0Ω	.1Ω	0Ω	13.5KΩ	125KΩ	1000Ω	
V3A	6AU6	22KΩ	0Ω	.1Ω	0Ω	12.5KΩ	12.5KΩ	1Ω	
‡ V3B	6AU6	22KΩ	0Ω	.1Ω	0Ω	12.5KΩ	12.5KΩ	1Ω	
V4	6BA6	200KΩ	0Ω	0Ω	.1Ω	13.5KΩ	112KΩ	180Ω	
‡ V5	6BA6	.1Ω	0Ω	0Ω	.1Ω	13.5KΩ	125KΩ	120Ω	
‡ V6	6AL5	180KΩ	180KΩ	0Ω	.1Ω	6.8KΩ	0Ω	6.8KΩ	
V7	6H6	0Ω	0Ω	220KΩ	350KΩ	200KΩ	180KΩ	.1Ω	0Ω
V8	6U5	.1Ω	†1 Meg.	2 Meg.	12.5KΩ	0Ω	0Ω		
V9	6SQ7	0Ω	4.7Meg.	0Ω	0Ω	0Ω	150KΩ	.1Ω	0Ω
V10	6SK7	0Ω	0Ω	0Ω	4.7Meg.	68Ω	†2.2Meg.	.1Ω	†280KΩ
V11	6V6GT	0Ω	0Ω	160Ω	†1.5KΩ	470KΩ	122KΩ	.1Ω	270Ω
V12	5Y3GT	Inf.	20KΩ	350KΩ	1KΩ	12.5KΩ	110Ω	Inf.	20KΩ

+ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
† Measured from pin 2 of V8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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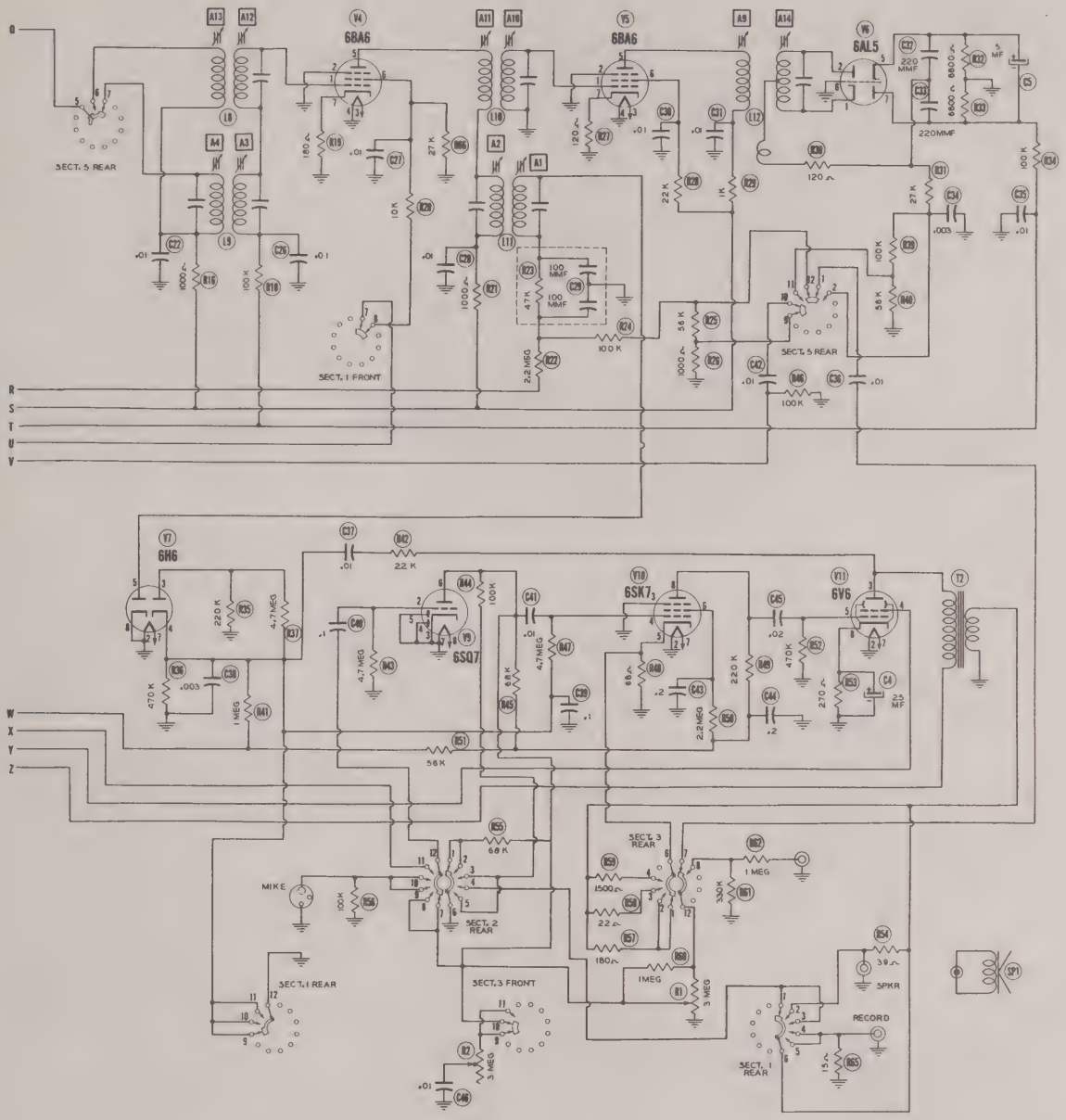

IF = 455 KC AM

IF = 10.7 MC FM

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set the dial pointers turn the tuning gang fully closed and set the pointers to the last calibration marks on the low frequency ends of the FM dial scales.
When complete receiver alignment is to be performed, the order given is recommended.
Turn the function selector switch to "radio". This position is maximum counter-clockwise.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	455KC (400∿ Mod.)	AM (clock-wise)	540KC	Across voice coil	A1,A2, A3,A4	Adjust for maximum output.
2.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V1). Low side to chassis.	1500KC (400∿ Mod.)	"	1500KC	"	A5,A6	"
3.	.01MFD	"	600KC (400∿ Mod.)	"	600KC	"	A7	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement can be made.
4.		Loop	1500KC (400∿ Mod.)	"	1500KC	"	A8	Replace set in cabinet and connect the AM loop. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V1). Low side to chassis.	10.7MC (Unmod.) -	FM (counter clock-wise)	88MC	DC Probe to Point (A) Common to chassis.	A9,A10, A11, A12, A13	Adjust for maximum deflection.
6.	.01MFD	"	"	"	"	DC Probe to Point (B) Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 8.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V4). Low side to chassis.	10.7MC (450KC Sweep)	FM (counter clock-wise)	88MC	Vert.Amp. to Point (C) Low side to chassis.	A9,A10, A11	Disconnect stabilizer capacitor C11. Adjust for maximum amplitude and symmetry as per Fig 1.
6.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V2). Low side to chassis.	"	"	"	"	A12, A13	"
7.	.05MFD	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A14, A9	Reconnect capacitor C11. Adjust A14 so 10.7MC occurs at center of crossover lines as per Fig 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of cross over lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	300Ω carbon res.	Across FM dipole terminals with 300Ω in series with high side of signal generator.	108MC (Unmod.)	FM	108MC	DC Probe to Point (A) Common to chassis.	A15, A16, A17	Adjust for maximum deflection. Rock tuning gang while adjusting A16 and A17.
9.	"	"	88MC (Unmod.)	"	88MC	"	A18, A19	Adjust for maximum deflection. Repeat steps 8 and 9 until no further improvement can be made.

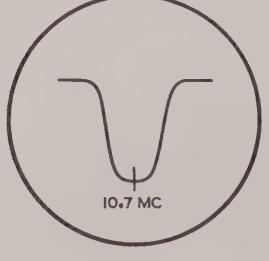


FIG. 1

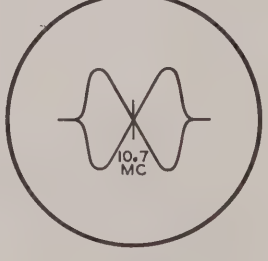
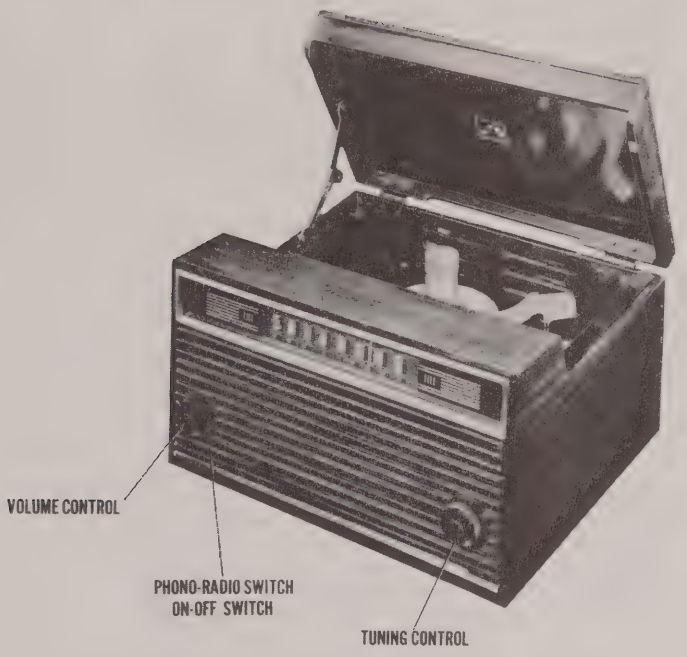


FIG. 2

RCA VICTOR MODEL
9Y7 (Ch. RC-1057B)



RCA VICTOR MODEL 9Y7

TRADE NAME RCA Victor, Model 9Y7 (Ch. RC-1057B)
MANUFACTURER RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (SIX) Types 12SA7 Converter, 12SK7 IF Amp., 6AQ6 DET.-AVC-Phase Inv., 6AQ6 AF Amp., (2) 35L6GT Power Output

POWER SUPPLY 110-120 Volts AC RATING: .33 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn the tuning gang fully closed and set the pointer 3 3/8 inches from the left hand end of the dial backplate.

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

The measurements for the dial settings, from the left hand end of the dial backplate are, gang fully closed-3 3/8 inches, 1400KC- 8 3/8 inches, 1600KC-9 1/2 inches.

Turn the selector switch to radio "high".

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antstator of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Quiet Point near 1600KC.	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation.
	Antenna loop and record changer must be properly installed in cabinet before beginning step 2						
2.		Loop	1620KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC (400~ Mod.)	Tune for max. output	"	A6	"
4.		Loop	600KC (400~ Mod.)	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Rock tuning gang while adjusting A7. Repeat steps 2, 3, and 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 9Y7

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET.-AVC-Phase Inverter	6AQ6	6AQ6	7BT	
V4	AF Amp.	6AQ6	6AQ6	7BT	
V5	Power Output	35L6GT	35L6GT	7AC	
V6	Power Output	35L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	73013	AF888D†	UP84215		EL-3401†	■ Filter
B	30	150		PRS150/10			UT-121	▲ Filter
C	10	150						Filter
C2	.05	400	73553	P488-05	GT4S5		TM-15	AVC Filter
C3	56		73499	1468-00005	5W5Q5	GP1K-56	1FM-45	Osc. Grid Cap.
C4	.02	400	73638	P488-02	GT4S2		TM-12	Audio Coupling
C5	56	500	39622	1468-00005	5W5Q5	GP1K-56	1FM-45	Tone Compensation
C6	.005	400	72791	P688-005	GT6D5	GP2M-005	TM-25	Tone Compensation
C7	.001	400	70600	P688-001	GT6D1	GP2L-001	TM-21	Tone Compensation
C8	.05	400	73553	P488-05	GT4S5		TM-15	Phono Isolation
C9	.02	400	70611	P488-02	GT4S2		TM-12	Audio Coupling
C10	120	500	39630	1468-00015	5W5T15	GP2K-120	1FM-315	AF Plate Bypass
C11	.003	400	70603	P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C12	.01	400	73561	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C13	.01	400	73561	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C14	.01	400	73561	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C15	.015	400	70572	P488-015	GT6S15		TM-11	Output Plate Bypass
C16	.015	400	70572	P488-015	GT6S15		TM-11	Output Plate Bypass
C17	.05	400	70615	P488-05	GT4S5		TM-15	Line Isolation
C18	.025	400	70612	P488-025	GT4S25		TM-13	Line Filter

† Parallel sections to obtain desired capacity.

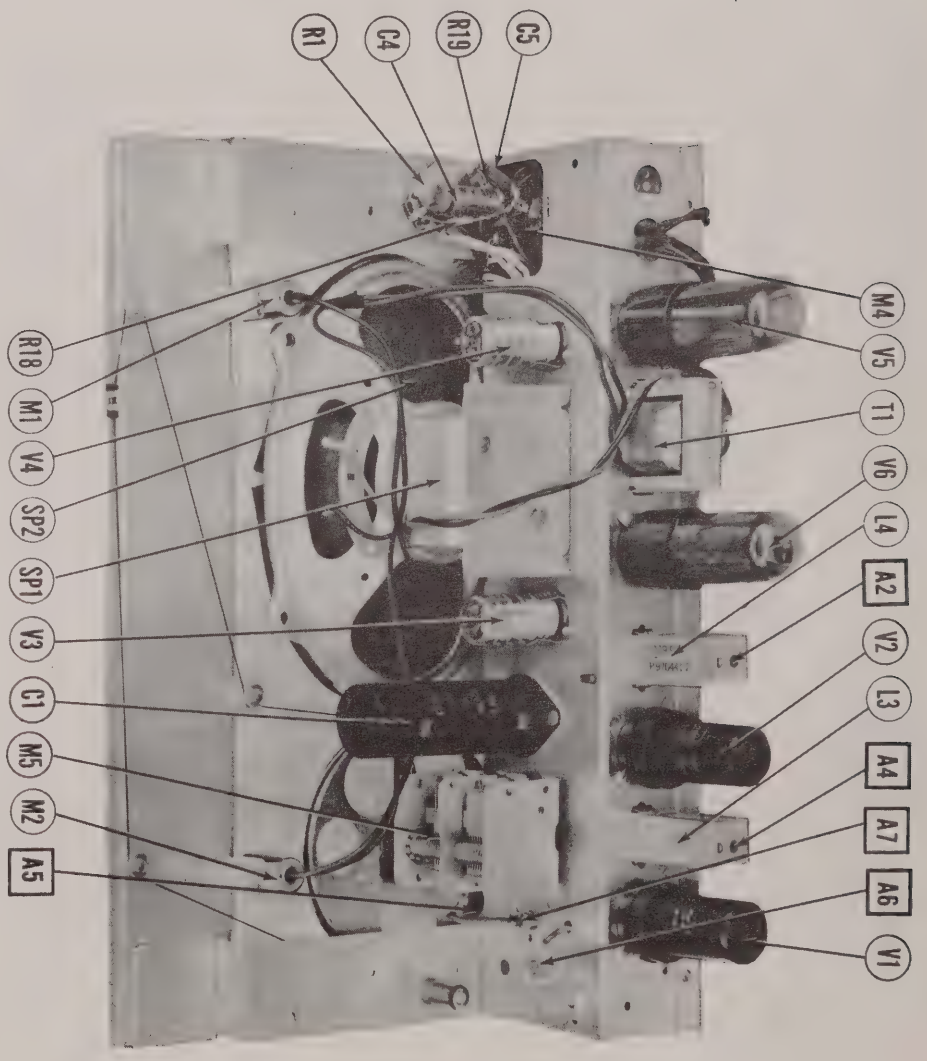
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	2 Meg.	½	38403	Q13-139X	T-120	Volume control, tapped @ 400KΩ

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½		BTS-22K	Osc. Grid
R3	100Ω	½			Parasitic Supp.
R4	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R5	330KΩ	½		BTS-330K	AVC Network
R6	180KΩ	½		BTS-180K	Diode Load
R7	10 Meg.	½		BTS-10 Meg.	Phase Inv. Grid
R8	220KΩ	½		BTS-220K	Phase Inv. Plate
R9	10 Meg.	½		BTS-10 Meg.	AF Grid
R10	220KΩ	½		BTS-220K	AF Plate
R11	470KΩ	½		BTS-470K	Output Grid
R12	12KΩ	½		BTS-12K	Output Grid
R13	470KΩ	½		BTS-470K	Output Grid
R14	82Ω	1		BW-1-82	Output Cathode
R15	220KΩ	½		BTS-220K	Isolation
R16	1 Meg.	½		BTS-1 Meg.	Series Phono Pickup
R17	82KΩ	½		BTS-82K	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	
R18	1.5 Meg.	½		BTS-1.5 Meg.	Tone Compensation
R19	56KΩ	½		BTS-56K	Tone Compensation
R20	1800Ω	½		BTS-1800	Filter
R21	1200Ω	1		BW-1-1200	Filter
R22	66Ω *	½	73038		Pilot Lamp Shunt Wire Wound
R23	95Ω ♯	½	73072		Pilot Lamp Shunt

* Normal value with positive temperature coefficient, @ no load, resistance is 74Ω @ normal load, and 90 @ .225 Amps.
♯ Normal value with negative temperature coefficient, @ no load, resistance is 14Ω @ normal load.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	5000Ω CT	3.6Ω	230Ω	.5Ω	73008	A-3856 ‡	A-2900 ‡	RO-301 ‡	‡ Cut mounting tabs to duplicate original.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.6Ω	72727		57A1	
	CONE DIA.	V. C. DIA.				
SP2	4 7/8" x 6 7/8"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.1Ω		74248		
L2	Osc. Coil	1Ω	6Ω	73048	14-1060	
L3	Input IF	11Ω	12Ω	73036	16-6678	
L4	Output IF	15Ω	15Ω	73037	16-6678	Add 150MMF cap. from black lead to ground.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M1	Bayonet	7.5	.2	White	11765		Type #51
M2	Bayonet	7.5	.2	White	11765		Type #51

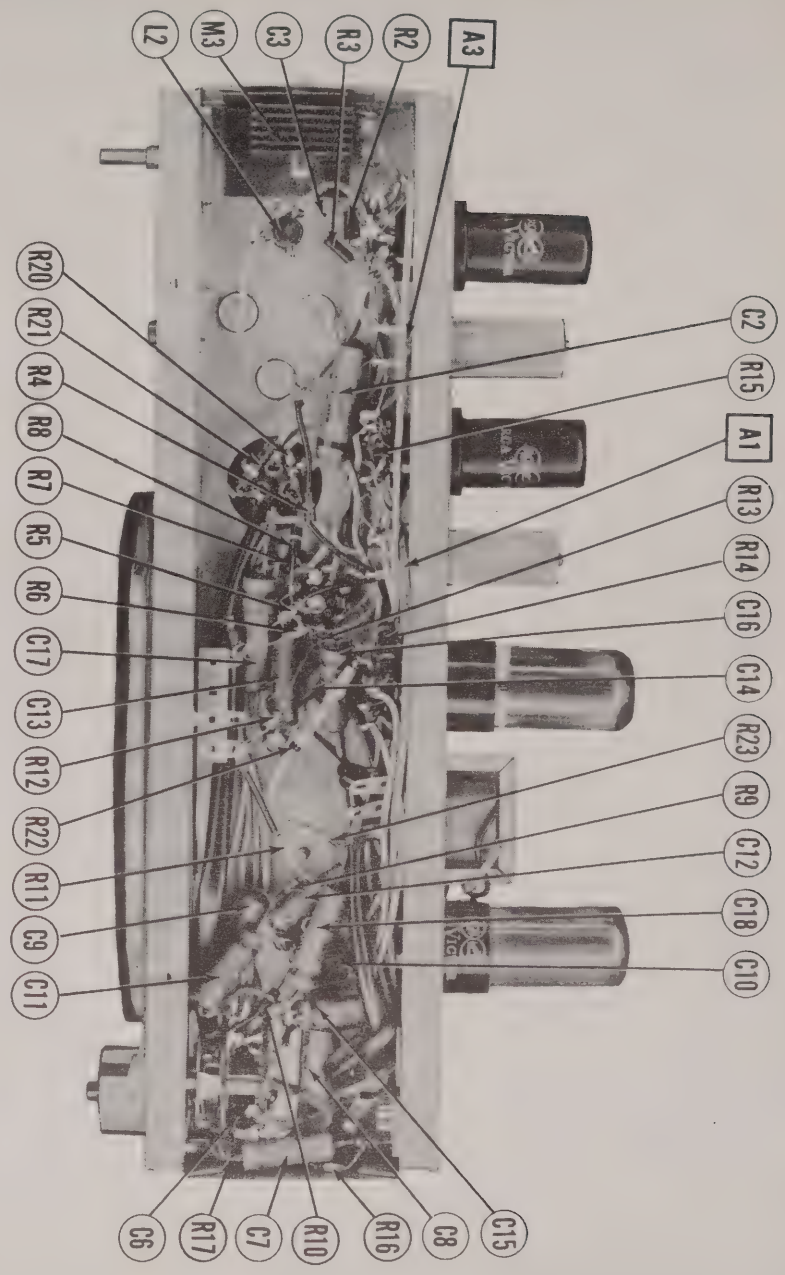
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	RCA PART No.	SYLVANIA PART NO.		
M3	.098A	73009	ND-5		

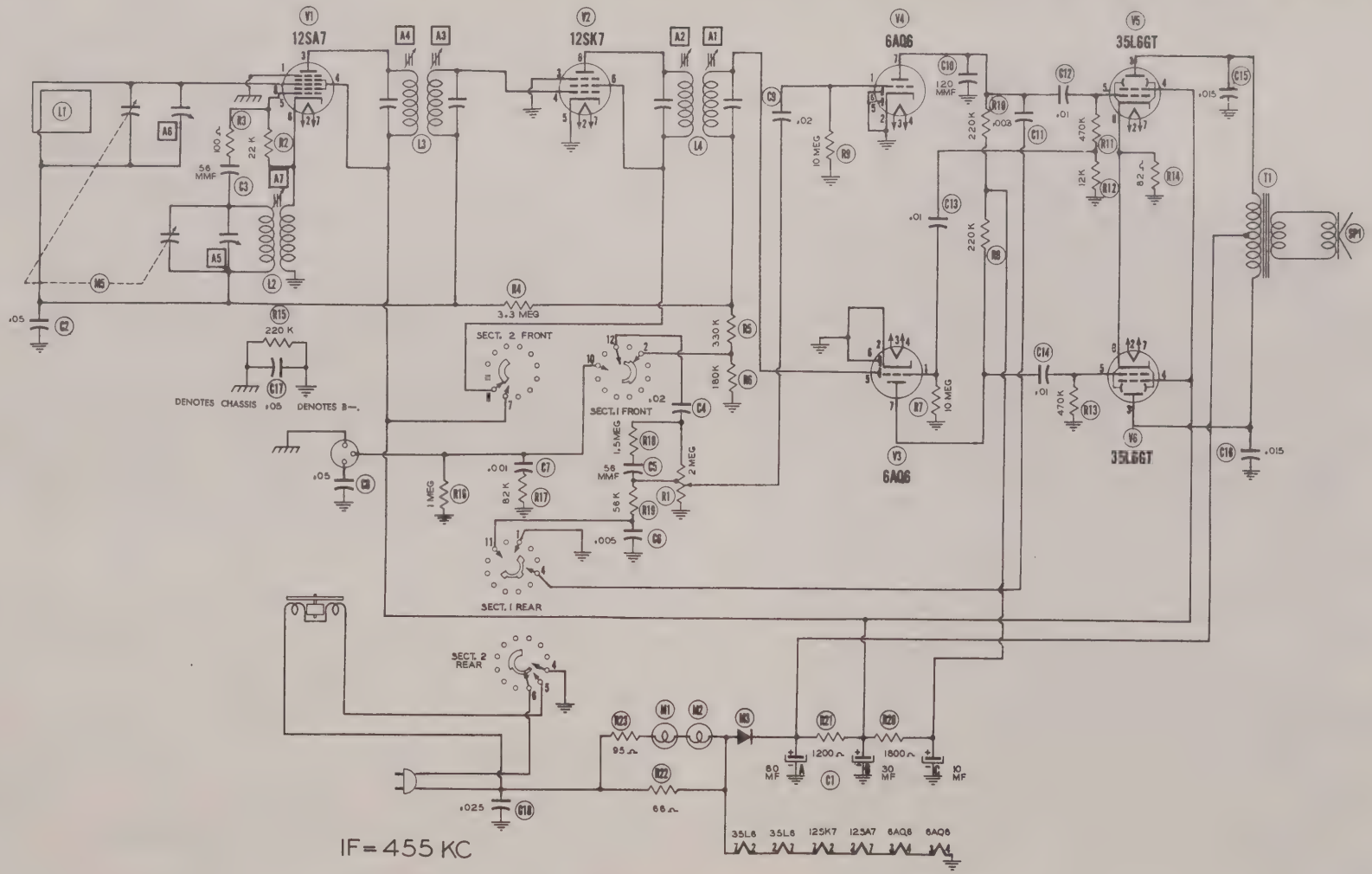
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M4	Switch	73011	Radio-Phono-Power
M5	2 Gang. Var. Cap.	74296	(12-533MMF, 29-212MMF)
	Dial Scale	74224	
	Dial Pointer	73386	

CHASSIS—BOTTOM VIEW



DATE 11/49 SET #75 FOLDER 13
RCA VICTOR MODEL 9X7
RCA VICTOR MODEL 9X7



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0V	24VAC	90VDC	90VDC	§-7.7VDC	0V	12VAC	-.1VDC
V 2	12SK7	0V	24VAC	0V	-.2VDC	0V	90VDC	38VAC	90VDC
V 3	6AQ6	-.6VDC	0V	12VAC	6VAC	-.4VDC	0V	45VDC	
V 4	6AQ6	-.6VDC	0V	6VAC	0V	0V	0V	45VDC	
V 5	35L6GT	0V	70VAC	120VDC	90VDC	0V	0V	38VAC	6.2VDC
V 6	35L6GT	0V	70VAC	120VDC	90VDC	0V	0V	107VAC	6.2VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	25Ω	†1.2KΩ	†1.2KΩ	22KΩ	1Ω	12Ω	3.8Meg.
V 2	12SK7	220KΩ	25Ω	0Ω	3.8Meg.	0Ω	†1.2KΩ	38Ω	†1.2KΩ
V 3	6AQ6	10 Meg.	0Ω	12Ω	6Ω	500KΩ	0Ω	†220KΩ	
V 4	6AQ6	10 Meg.	0Ω	6Ω	0Ω	0Ω	0Ω	†220KΩ	
V 5	35L6GT	Inf.	75Ω	†110Ω	†1.2KΩ	470KΩ	0Ω	38Ω	8Ω
V 6	35L6GT	Inf.	75Ω	†110Ω	†1.2KΩ	470KΩ	0Ω	110Ω	38Ω

† Measured from output of M3

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22

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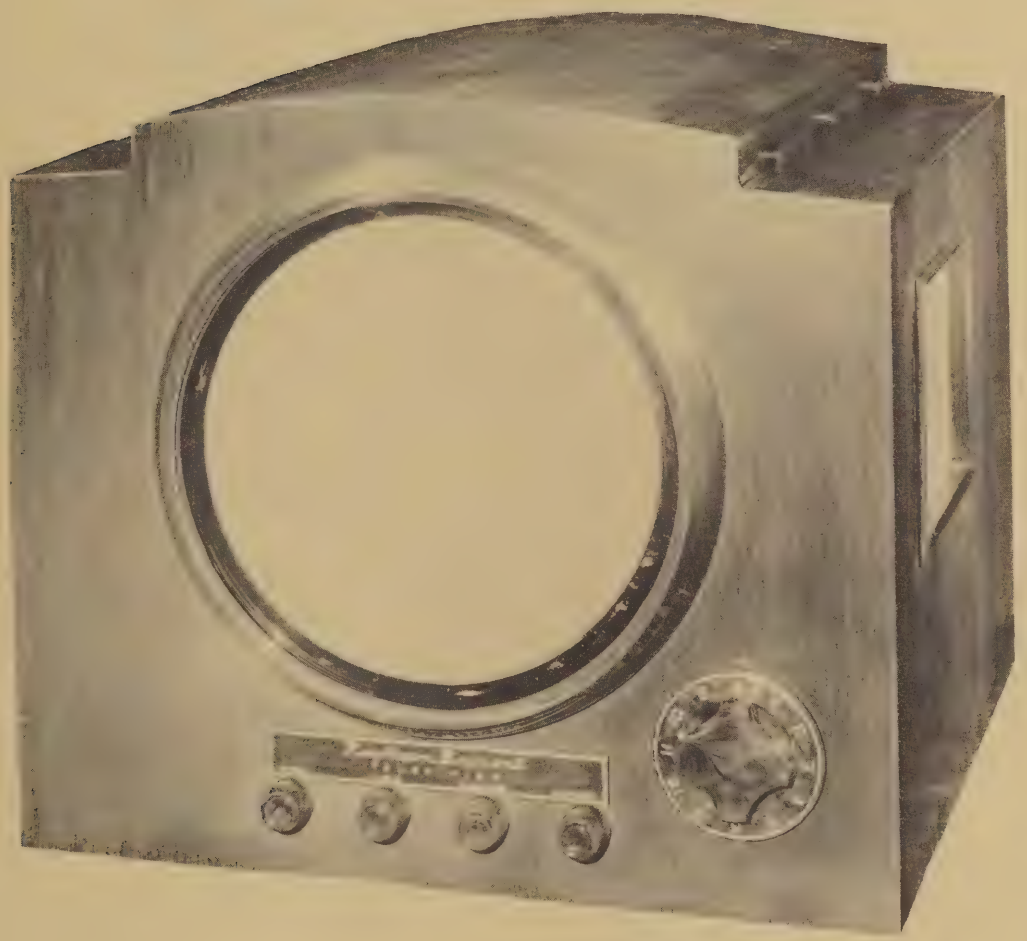

RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22

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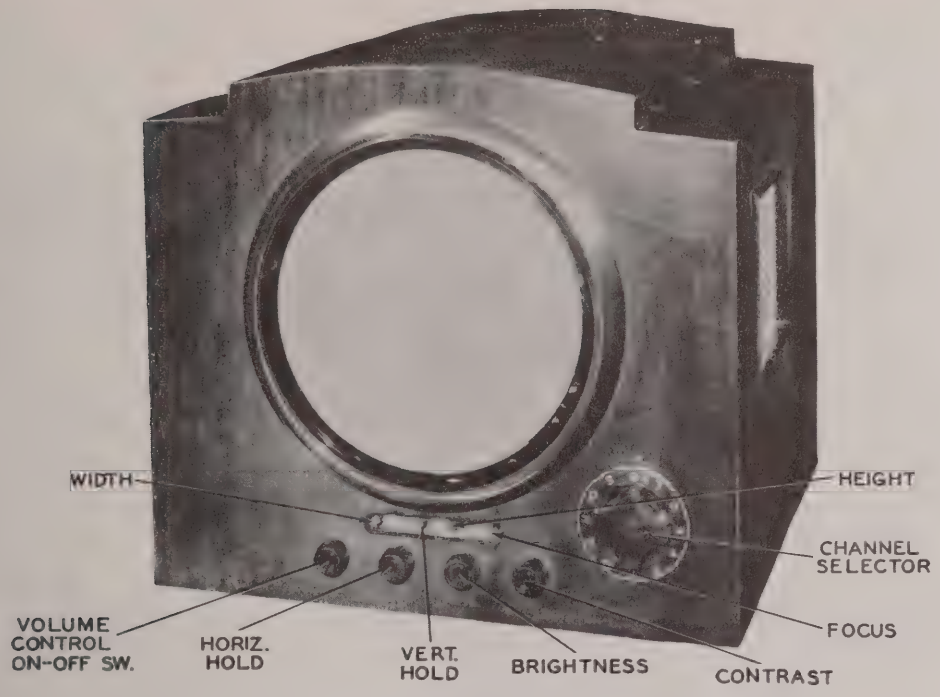
DATE 11–49 SET 75 FOLDER 14

RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22



RAYTHEON MODEL 10DX24

TRADE NAME	Raytheon-Models A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22
MANUFACTURER	Belmont Radio Corp., 5921 W. Dickens Ave., Chicago 39, Illinois
TYPE SET	AM-FM-Phono-TV Receiver-Some Models TV only.
TUBES	Twenty Five-TV only Models. Thirty Two-Combination Models
POWER SUPPLY	105-125 Volts AC (DC with Polarizing Relay)
TUNING RANGE	TV Channel 2 thru 13 AM 530-1620KC FM 88-108MC
RATING:	TV-1.7 Amp. @ 117 Volts AC Radio-.43 Amp. @ 117 Volts AC

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RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22

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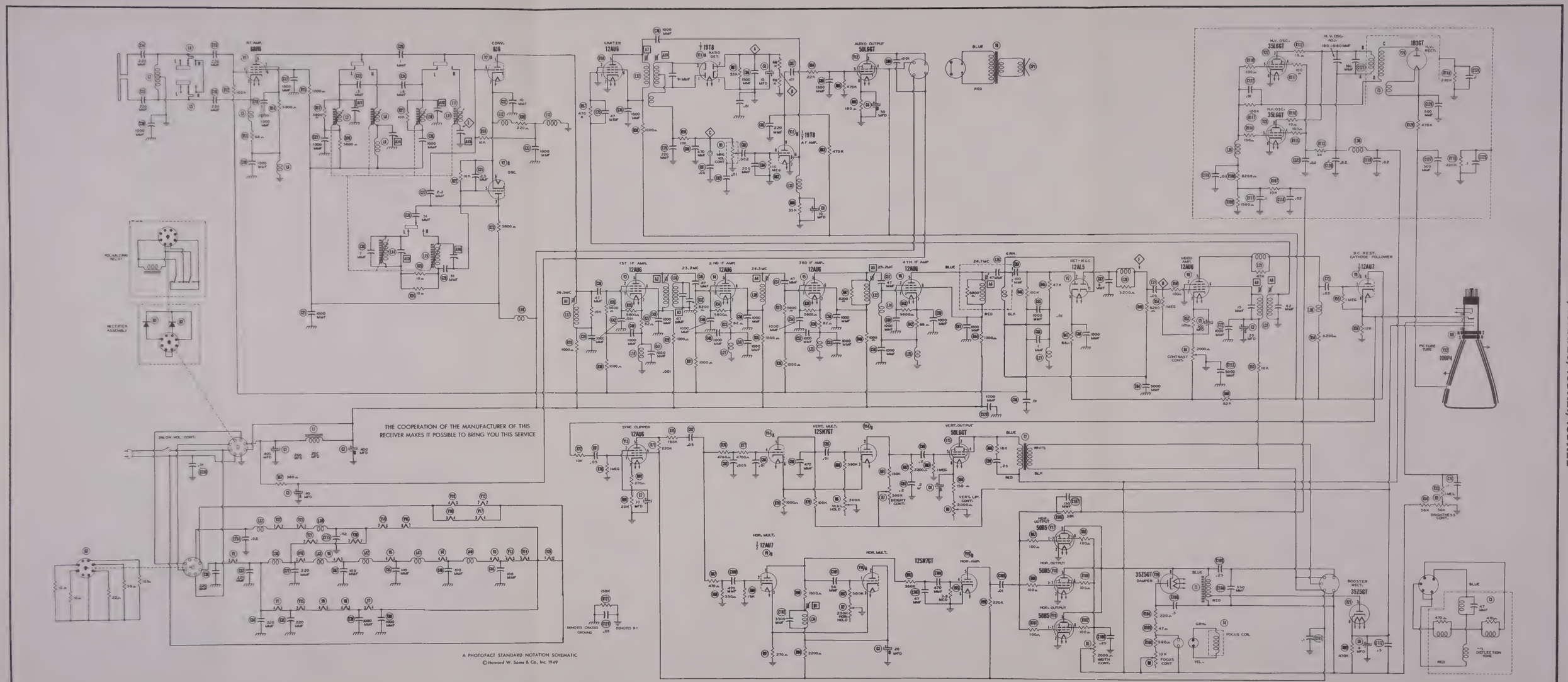
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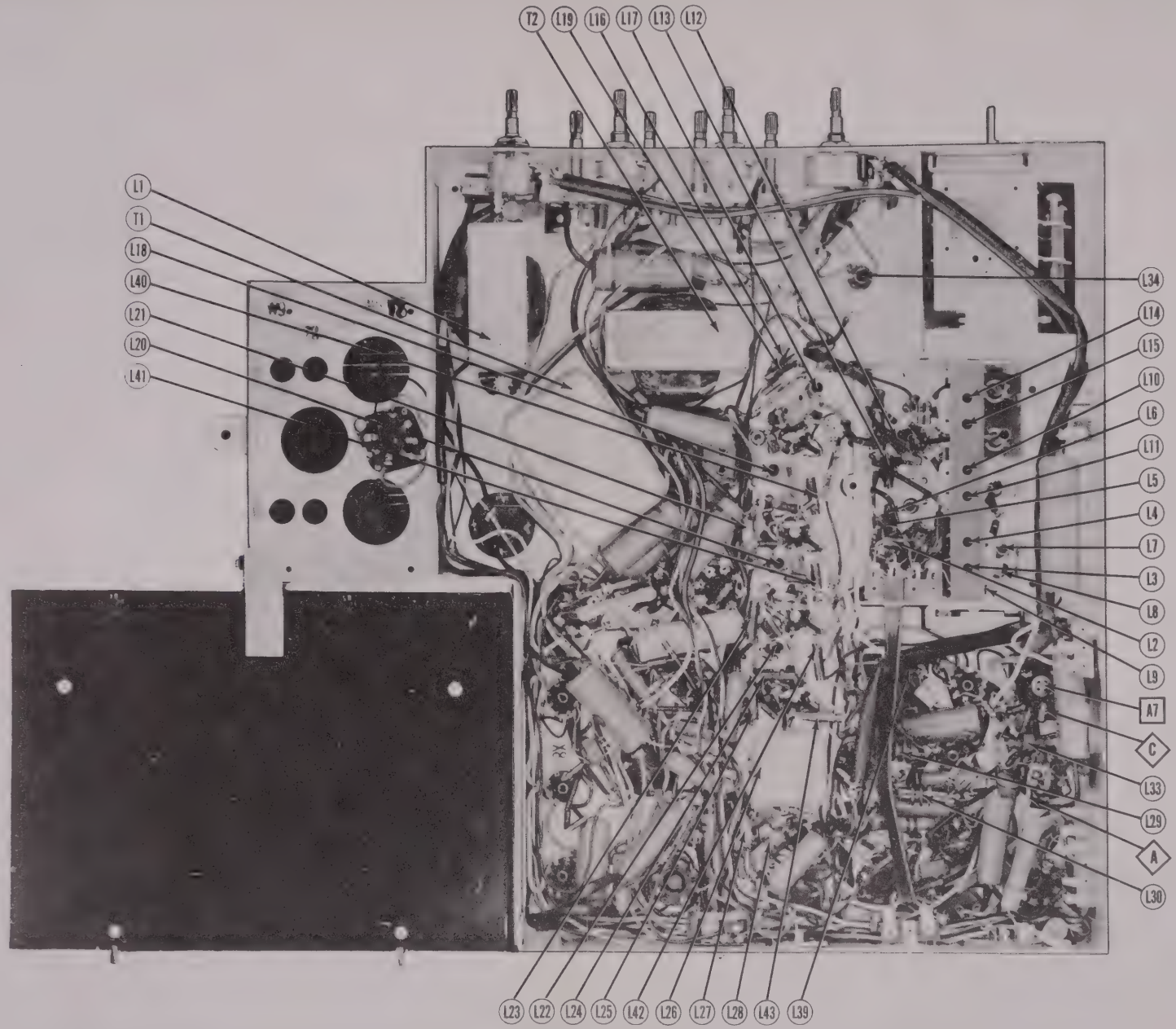
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

AM-FM CHASSIS-TOP VIEW

TV-ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Due to the fact that this receiver incorporates a series filament string, a 10Ω 10 Watt resistor may be substituted for the picture tube filament if it is desired to align the receiver with the picture tube removed. The high voltage lead should be taped and placed so as not to present a shock hazard.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the AGC line and the positive lead to B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over converter tube (V2). Low side to tuner cover.	26.3MC	9	Across R49	A1	Adjust for maximum deflection.
2.		"	23.2MC	"	"	A2	"
3.		"	22.4MC	"	"	A3	Adjust for minimum deflection.
4.		"	26.3MC	"	"	A4	"
5.		"	23.2MC	"	"	A5	"
6.		"	24.7MC	"	"	A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.		High side to ungrounded tube shield floating over converter tube (V2). Low side to tuner cover.	25MC (10MC Sweep)	22.4MC 26.9MC	9	Across R49 with 10KΩ in series with the high side scope lead and 1000MMF across the scope input terminals.		Observe response curve and if necessary, slightly retouch A1 thru A6 for proper pattern and marker placement as per Fig 1.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point (A) to B-. The junction of these two resistors is alignment Point (B) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.05MFD	High side to pin 1 (Grid) of 12AU6 (V8). Low side to B-.	4.5MC (Unmod.)	9	DC Probe to Point (A) Common to B-.	A7,A8, A9	Adjust for maximum deflection.
9.	.05MFD	"	"	"	DC Probe to Point (C) Common to Point (B).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.05MFD	High side to pin 1 (Grid) of 12AU6 (V8). Low side to B-.	4.5MC (1MC Sweep)	4.5MC	9	Vert.Amp. to Point (A) Low side to B-.	A7,A8, A9	Disconnect stabilizer cap. C8 from Point A. Adjust A7, A8, A9 for maximum amplitude and symmetry as per Fig 2.
9.	.05MFD	"	"	"	"	Vert.Amp. to Point (C) Low side to B-.	A10	Reconnect capacitor C8. Adjust A10 so 4.5MC marker is at center of pattern as per Fig 3. Slightly retouch A7 for maximum amplitude and straightness of diagonal line.

TUNER ALIGNMENT

Pre-set the trimmers to the approximate dimensions shown in Fig 4 and pre-set the slugs to the dimensions shown in Fig 5.

(A) LOW BAND ALIGNMENT

Turn the channel selector switch to channel 6 and turn the channel 6 station selector screw one turn out from its maximum "in" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 125Ω carbon res.	Across antenna terminals with 125Ω in each generator lead.	85MC (10MC Sweep.	83.25MC	6	Across R49 with 10KΩ in series with high side scope lead and 1000MMF across scope input terminals.	A11,A12 A13	Adjust A11 and A12 for maximum amplitude and symmetry as per Fig 6. Adjust A13 so marker appears at 50% down on the response curve. If necessary, repeat the adjustment of A11 and A12.
11.	"	"	79MC (10MC Sweep)		5	"		Check response on all low band channels. Slight readjustment of A11 and A12 may be necessary to obtain optimum response on all low band channels.
			69MC (10MC Sweep)		4			
			63MC (10MC Sweep)		3			
			57MC (10MC Sweep)		2			
12.	"	"	57MC (10MC Sweep)	55.25MC	2	"		If the 55.25MC marker can be moved to the 50% point by the channel 2 station selector screw with the screw at least 2 turns in from its maximum "out" position, the low band is properly aligned.

TV-ALIGNMENT INSTRUCTIONS (CONT.)

(B) HIGH BAND ALIGNMENT

Turn the channel selector switch to channel 13 and turn the channel 13 station selector screw 3/4" out from its maximum "in" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 125Ω carbon res.	Across antenna terminals with 125Ω in each generator lead.	213MC (10MC Sweep)	211.25MC	13	Across R49 with 10KΩ in series with high side scope lead and 1000MMF across scope input terminals.	A14, A15, A16	Adjust A14 and A15 for maximum amplitude and symmetry as per Fig 6. Adjust A16 so marker appears at 50% down on the response curve. If necessary, repeat the adjustment of A14, and A15.
14.	"	"	207MC (10MC Sweep)		12	"		Check response on all high band channels. Slight readjustment of A14 and A15 may be necessary to obtain optimum response on all high band channels.
			201MC (10MC Sweep)		11			
			195MC (10MC Sweep)		10			
			189MC (10MC Sweep)		9			
			183MC (10MC Sweep)		8			
			177MC (10MC Sweep)		7			
15.	"	"	177MC (10MC Sweep)	175.25MC	7	"		If the 175.25MC marker can be moved to the 50% point on the response curve by the channel 7 station selector screw at least one turn in from the maximum "out" position, the high band is properly aligned.

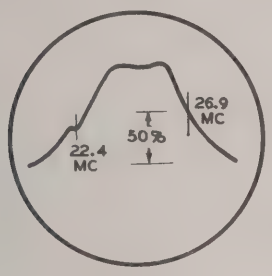


FIG. 1

FIG. 2

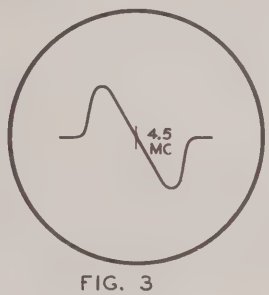


FIG. 3

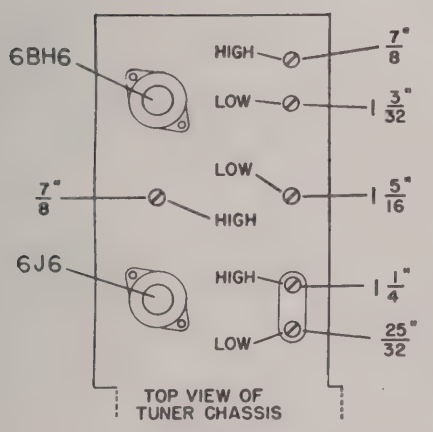


FIG. 4

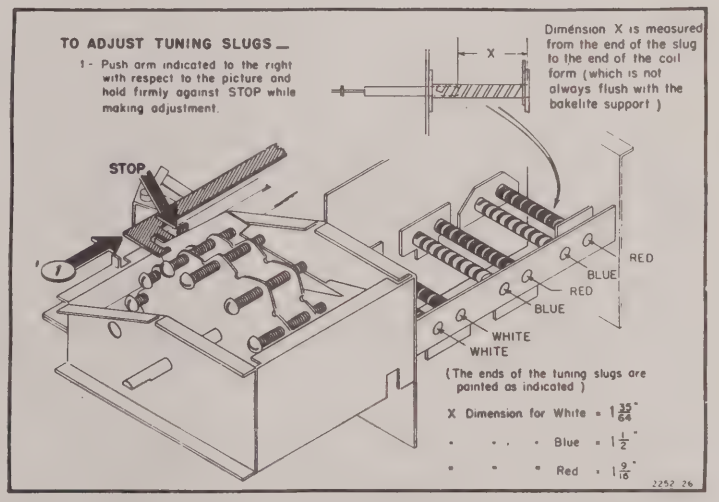

TO ADJUST TUNING SLUGS—
1- Push arm indicated to the right with respect to the picture and hold firmly against STOP while making adjustment.
Dimension X is measured from the end of the slug to the end of the coil form (which is not always flush with the bakelite support)
X
STOP
RED
BLUE
RED
BLUE
WHITE
WHITE
(The ends of the tuning slugs are painted as indicated)
X Dimension for White = 1 35/64"
" " " Blue = 1 1/2"
" " " Red = 1 9/16"
2252 26

FIG. 5

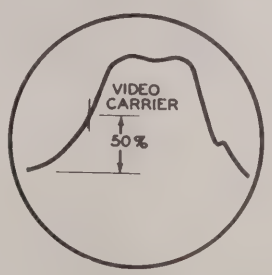


FIG. 6

RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF23, 10DX21, 10DX22

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn the tuning gang fully closed and set the right hand edge of the pointer saddle even with the calibration indentations at the extreme right hand end of pointer saddle slide bar.

The dial calibration marks located on the pointer slide bar are as follows reading left to right (front row): extreme left hand limit, 1620KC, 1400KC, 1000KC, 600KC, 535KC or extreme right hand limit. (Rear row): extreme left hand limit, 108MC, 98MC, 90MC, 88MC, extreme right hand limit.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
16	.1MFD	High side to pin 1 (Grid) of 12BA6 (V27). Low side to B-.	455KC (400∿ Mod.)	AM (center position)	Tuning gang fully open	Across voice coil	A17, A18	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .002MFD to reduce hum modulation.
17	.1MFD	High side to pin 7 (Grid) of 12BA7 (V26). Low side to B-.	"	"	"	"	A19, A20	Adjust for maximum output.
18	Direct	High side to AM external antenna clip. Low side to B-.	1620KC	"	1620KC	"	A21	" " " "
19	Direct	"	1400KC	"	Tune for max. output.	"	A22	" " " "

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point (F) to B-. The junction of these two resistors is alignment Point (H) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	.1MFD	High side to Point D. Low side to chassis.	10.7MC (Unmod.)	FM (fully clockwise)	Point of non-interference	DC Probe to Point (E) Common to B-.	A23, A24, A25, A26	Adjust for maximum deflection.
21	.1MFD	"	"	"	"	DC Probe to Point (E) Common to B-.	A27	" " " "
22	.1MFD	"	"	"	"	DC Probe to Point (G) Common to Point (H)	A28	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 21 and 22.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
20	.1MFD	High side to Point D. Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non interference	Vert.Amp. to Point (E) Low side to chassis.	A23, A24, A25, A26	Adjust for maximum amplitude and symmetry as per Fig 7.
21	.1MFD	"	"	"	"	Vert.Amp. to Point (G) Low side to chassis.	A27, A28	Adjust A28 so crossover point occurs at center of pattern as per Fig 8. Adjust A27 for maximum amplitude and straightness of crossover lines. Repeat the adjustments of A27 and A28. Continue with step 23.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
23	300Ω carbon res.	High side thru 300Ω to left hand FM antenna terminal. Low side to right hand terminal.	108MC	FM	108MC	DC Probe to Point (E) Common to B-.	A29	Adjust for maximum deflection.
24	"	"	98MC	"	Tune for max. signal	"	A30	" " " "

FIG. 7

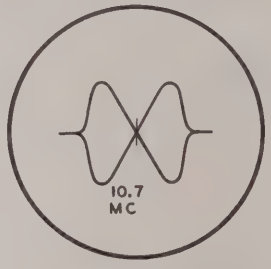
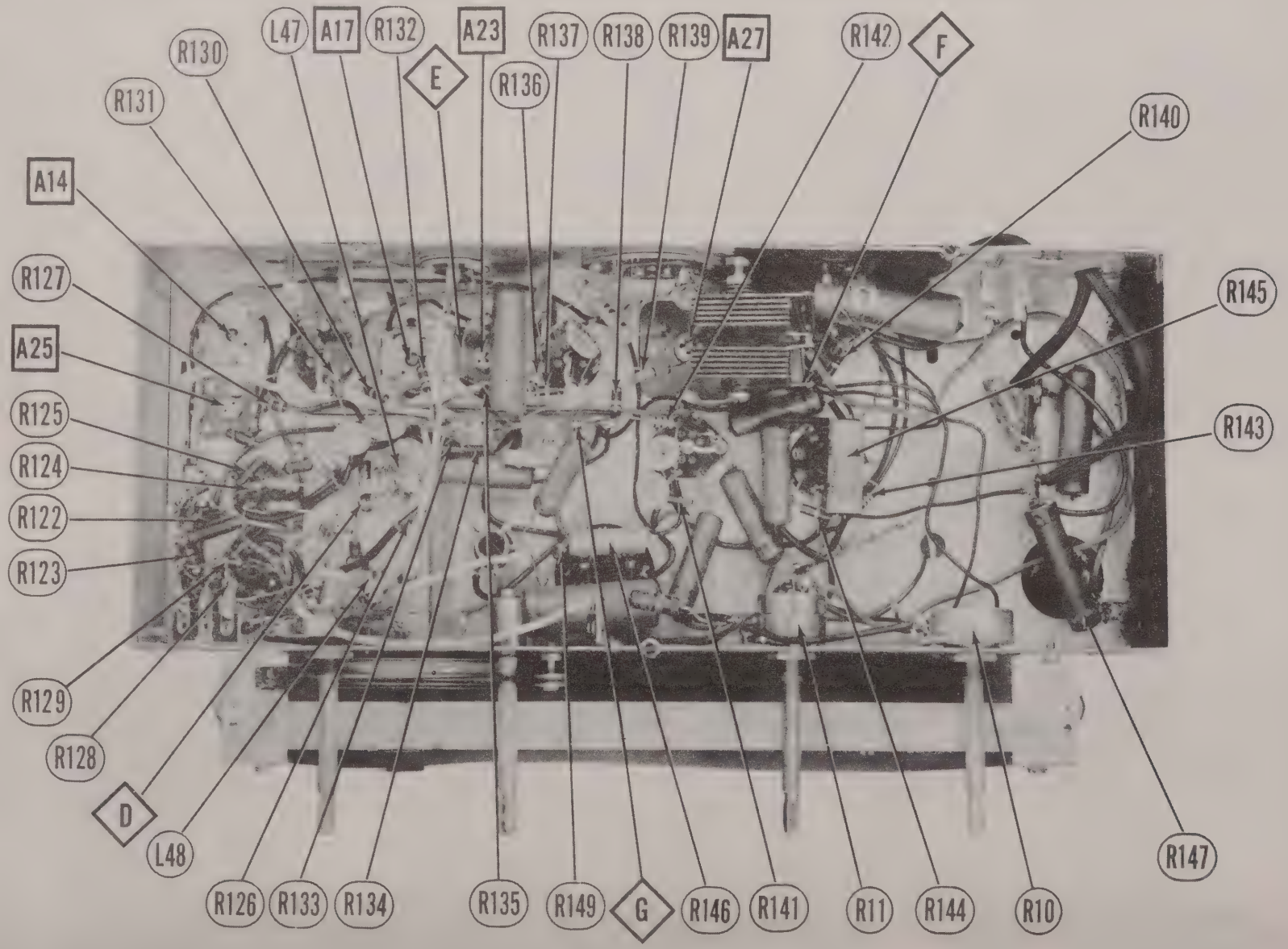
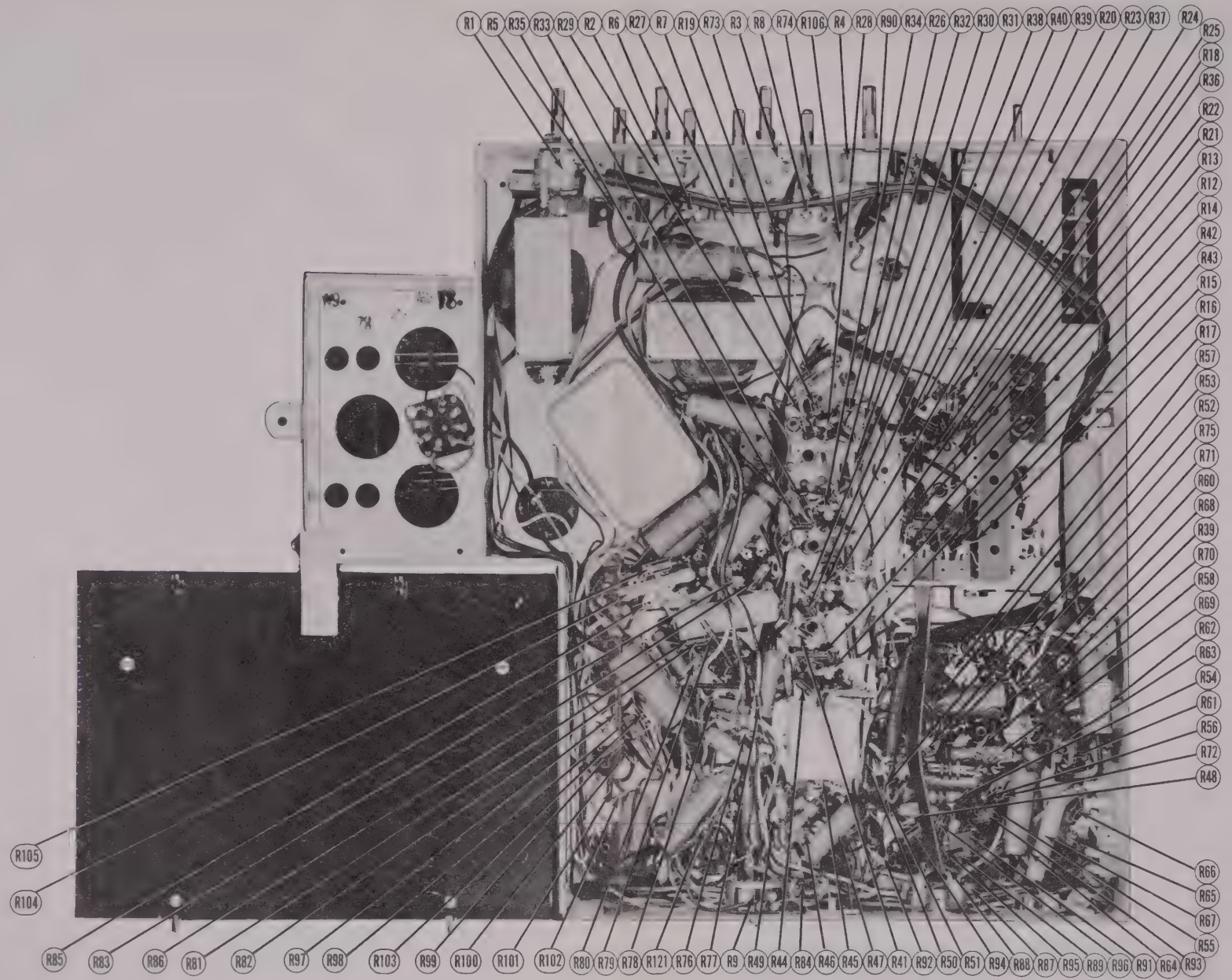


FIG. 8



AM-FM CHASSIS-RESISTOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

AM-FM CHASSIS-CAPACITOR AND INDUCTOR IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	-.2VDC	.4VDC	95VAC	100VAC	100VDC	120VDC	0V		
V 2	6J6	120VDC	80VDC	106VAC	100VAC	§.2VDC	0V	2VDC		
V 3	12AU6	-.4VDC	.5VDC	38VAC	50VAC	115VDC	115VDC	.6VDC		
V 4	12AU6	-.3VDC	.5VDC	50VAC	60VAC	115VDC	115VDC	.6VDC		
V 5	12AU6	-.3VDC	.5VDC	60VAC	74VAC	115VDC	115VDC	.6VDC		
V 6	12AU6	0V	.5VDC	74VAC	86VAC	110VDC	110VDC	.6VDC		
V 7	12AL5	0V	-1.5VDC	18VAC	6VAC	0V	0V	-1VDC		
V 8	12AU6	.5VDC	0V	18VAC	31VAC	87VDC	100VDC	13VDC		
V 9	12AU7	95VDC	0V	1.3VAC	45VAC	31VAC	125VDC	1.8VDC	60VDC	39VAC
V 10	12AU6	-.7VDC	0V	100VAC	88VAC	117VDC	112VDC	0V		
V 11	19T8	-.4VDC	-.8VDC	-.5VDC	7VAC	25VAC	-.5VDC	0V	-.6VDC	45VDC
V 12	50L6GT	0V	0V	90VDC	120VDC	0V	0V	50VAC	7.3VDC	
V 13	12AU6	0V	0V	25VAC	39VAC	127VDC	132VDC	0V		
V 14	12SN7GT	-15VDC -20VDC	65VDC 90VDC	1VDC	0V	125VAC	1VDC	18VAC	5VAC	
V 15	50L6GT	0V	50VAC	127VDC	127VDC	.1VDC	127VDC	100VAC	3.5VDC 19VDC	
V 16	12SN7GT	0V	132VDC	0V	0V	122VDC	0V	6VAC	19VAC	
V 17	50B5	-6.5VDC	0V	50VAC	0V	120VDC	92VDC 120VDC	-6.5VDC		
V 18	50B5	-6.5VDC	0V	100VAC	50VAC	120VDC	92VDC 120VDC	-6.5VDC		
V 19	50B5	-6.5VDC	0V	45VAC	95VAC	120VDC	92VDC 120VDC	-6.5VDC		
V 20	35Z5GT	0V	65VAC	55VAC	122VDC	40VDC	65VDC	31VAC	120VDC	
V 21	35Z5GT	0V	100VAC	90VAC	62VDC	120VDC	65VAC	65VAC	245VDC	
V 22	35L6GT	0V	100VAC	120VDC	62VDC	-31VDC	-28VDC	65VAC	0V	
V 23	35L6GT	0V	65VAC	120VDC	62VDC	-31VDC	0V	30VAC	0V	
V 24	1B3GT	* DO NOT MEASURE								TOP CAP *
‡V25	12AT7	75VDC	-.1VDC	1.2VDC	47VAC	36VAC	85VDC	0V	.7VDC	40VAC
V26A	12BA7	70VDC	§-2.3 VDC	0V	36VAC	23VAC	0V	0V	0V	75VDC
‡ V26B	12BA7	85VDC	§-.1VDC	0V	36VAC	23VAC	0V	0V	0V	85VDC ‡
V27	12BA6	-.1VDC	0V	47VAC	57VAC	85VDC	85VDC	.6VDC		
‡V28	12AU6	-.1VDC	-.1VDC	57VAC	70VAC	85VDC	85VDC	.4VDC		
‡V29	12AL5	-.7VDC	-.4VDC	0V	11VAC	0V	0V	-.9VDC		
V30	12AV6	-.5VDC	0V	23VAC	11VAC	0V	-.6VDC	55VDC		
V31	50L6GT	0V	70VAC	210VDC	90VDC	0V	0V	117VAC	4.7VDC	
V32	10BP4	0V	0V	PIN 10 240VDC	PIN 11 60VDC	PIN 12 6VAC				

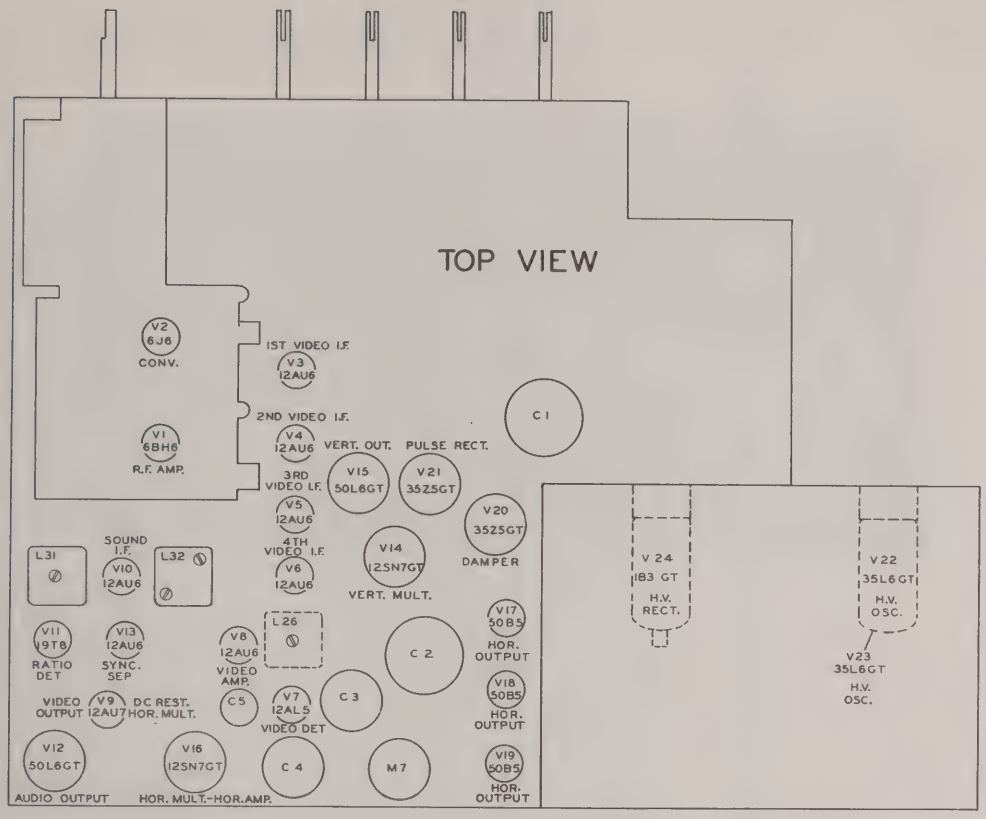
§TAKEN WITH VACUUM TUBE VOLTMETER.

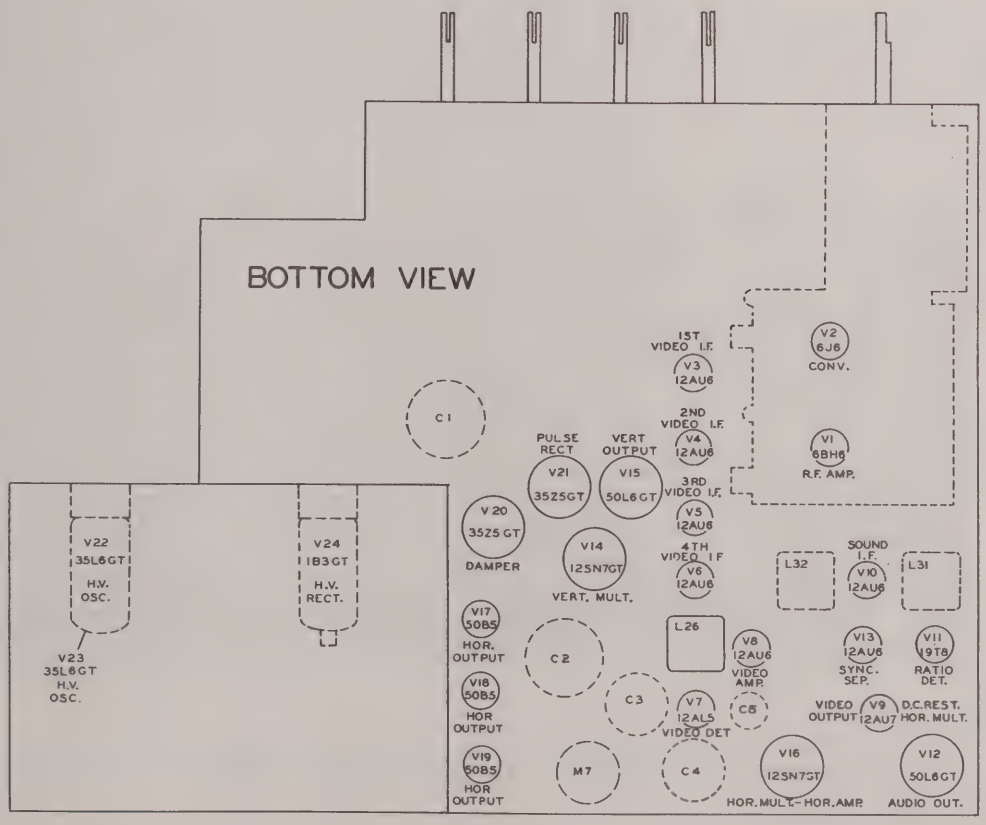
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	247KΩ	68Ω	28Ω	25Ω	†5.5KΩ	†1000Ω	5.5KΩ		
V 2	6J6	†1000Ω	†5.5KΩ	26Ω	25Ω	10KΩ	10KΩ	220Ω		
V 3	12AU6	150KΩ	5.5KΩ	24Ω	29Ω	†1000Ω	†1000Ω	82Ω		
V 4	12AU6	150KΩ	5.5KΩ	29Ω	32Ω	†1000Ω	†1000Ω	82Ω		
V 5	12AU6	150KΩ	5.5KΩ	32Ω	32Ω	†1000Ω	†1000Ω	82Ω		
V 6	12AU6	3Ω	5.5KΩ	32Ω	30Ω	†1000Ω	†1000Ω	68Ω		
V 7	12AL5	4Ω	47KΩ	13Ω	1.5Ω	150Ω	Inf.	8KΩ		
V 8	12AU6	1 Meg.	0Ω	13Ω	24Ω	†8.5KΩ	†10KΩ	2KΩ		
V 9	12AU7	†4KΩ	18KΩ	270Ω	30Ω	24Ω	†10Ω	1 Meg.	12KΩ	25Ω
V 10	12AU6	470KΩ	0Ω	25Ω	30Ω	†1000Ω	†1000Ω	0Ω		
V 11	19T8	1 Meg.	33KΩ	1 Meg.	1.5Ω	17Ω	33KΩ	0Ω	10 Meg.	†470KΩ
V 12	50L6GT	Inf.	0Ω	†900Ω	†10Ω	470KΩ	470KΩ	34Ω	180Ω	
V 13	12AU6	1 Meg.	22KΩ	17Ω	24Ω	†220KΩ	†10Ω	22KΩ		
V 14	12SN7GT	1 Meg. 480KΩ	♦640KΩ ♦170KΩ	1000Ω	10KΩ	♦100KΩ	1000Ω	16Ω	10Ω	
V 15	50L6GT	Inf.	34Ω	♦470KΩ	♦470KΩ	1 Meg.	20KΩ	34Ω	2KΩ 150Ω	
V 16	12SN7GT	600KΩ	†2KΩ	270Ω	4 Meg.	†220KΩ	0Ω	1.5Ω	10Ω	
V 17	50B5	50KΩ	0Ω	32Ω	0Ω	†42Ω	†2KΩ †120Ω	50KΩ		
V 18	50B5	50KΩ	0Ω	34Ω	32Ω	†42Ω	†2KΩ †120Ω	50KΩ		
V 19	50B5	50KΩ	0Ω	30Ω	35Ω	†42Ω	†2KΩ †120Ω	50KΩ		
V 20	35Z5GT	Inf.	32Ω	30Ω	†10Ω	†800Ω	†520Ω	16Ω	20KΩ	
V 21	35Z5GT	Inf.	25Ω	28Ω	†580Ω	†13Ω	0Ω	32Ω	200KΩ	
V 22	35L6GT	Inf.	58Ω	†42Ω	†3KΩ	10KΩ	10KΩ	42Ω	0Ω	
V 23	35L6GT	Inf.	42Ω	†42Ω	†3KΩ	10KΩ	Inf.	16Ω	0Ω	
V 24	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 110KΩ
‡V25	12AT7	♦5KΩ	150KΩ	680Ω	32Ω	28Ω	♦5KΩ	0Ω	220Ω	30Ω
V26A	12BA7	♦5KΩ	22KΩ	1Ω	28Ω	20Ω	0Ω	5.5 Meg.	0Ω	♦5KΩ
‡ V26B	12BA7	♦5KΩ	22KΩ	1.5Ω	28Ω	20Ω	0Ω	0Ω	0Ω	♦5KΩ ‡
V27	12BA6	1.5 Meg	0Ω	32Ω	33Ω	♦5KΩ	♦5KΩ	68Ω		
‡V28	12AU6	150KΩ	220KΩ	33Ω	32Ω	♦5KΩ	♦5KΩ	68Ω		
‡V29	12AL5	Inf.	Inf.	0Ω	12Ω	0Ω	Inf.	22KΩ		
V30	12AV6	6.8 Meg.	0Ω	20Ω	12Ω	0Ω	1.5 Meg.	♦470KΩ		
V31	50L6GT	Inf.	32Ω	♦1000Ω	♦4.5KΩ	470KΩ	0Ω	3Ω	150Ω	
V32	10BP4	1.5Ω	PIN 10 ♦0Ω	PIN 11 †1 Meg.	PIN 12 0Ω					

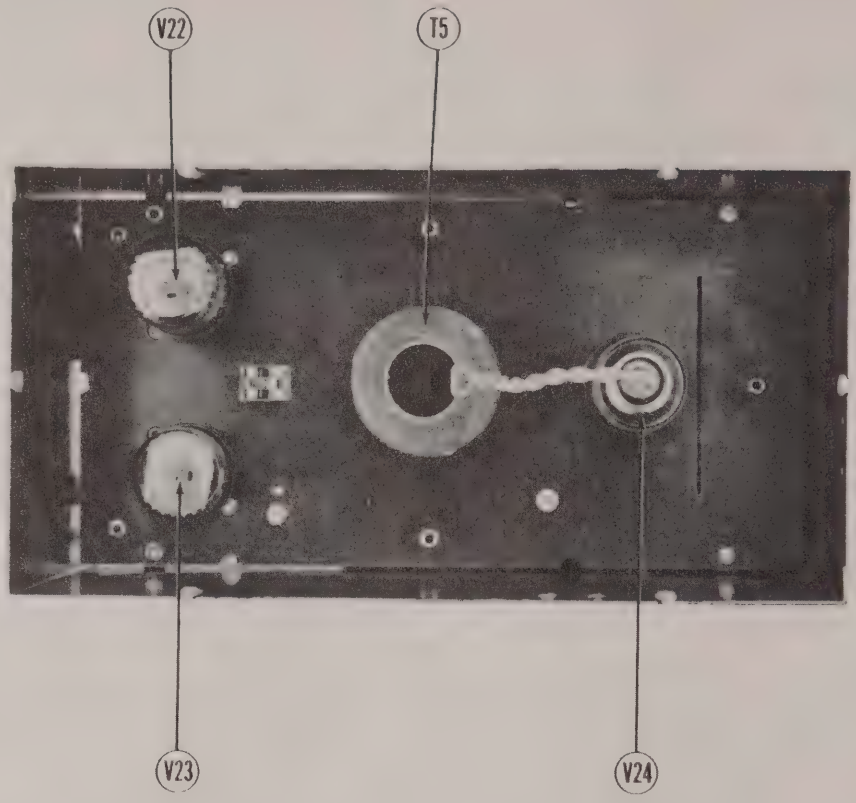
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

† Measured From Output Of M1 And M2.
▲ Reading Taken With Selector Sw. Set On Channel 4.
♦ Measured From Pin 8 Of V21.
♦ Measured From Output Of M3.
‡ Taken In FM Position.

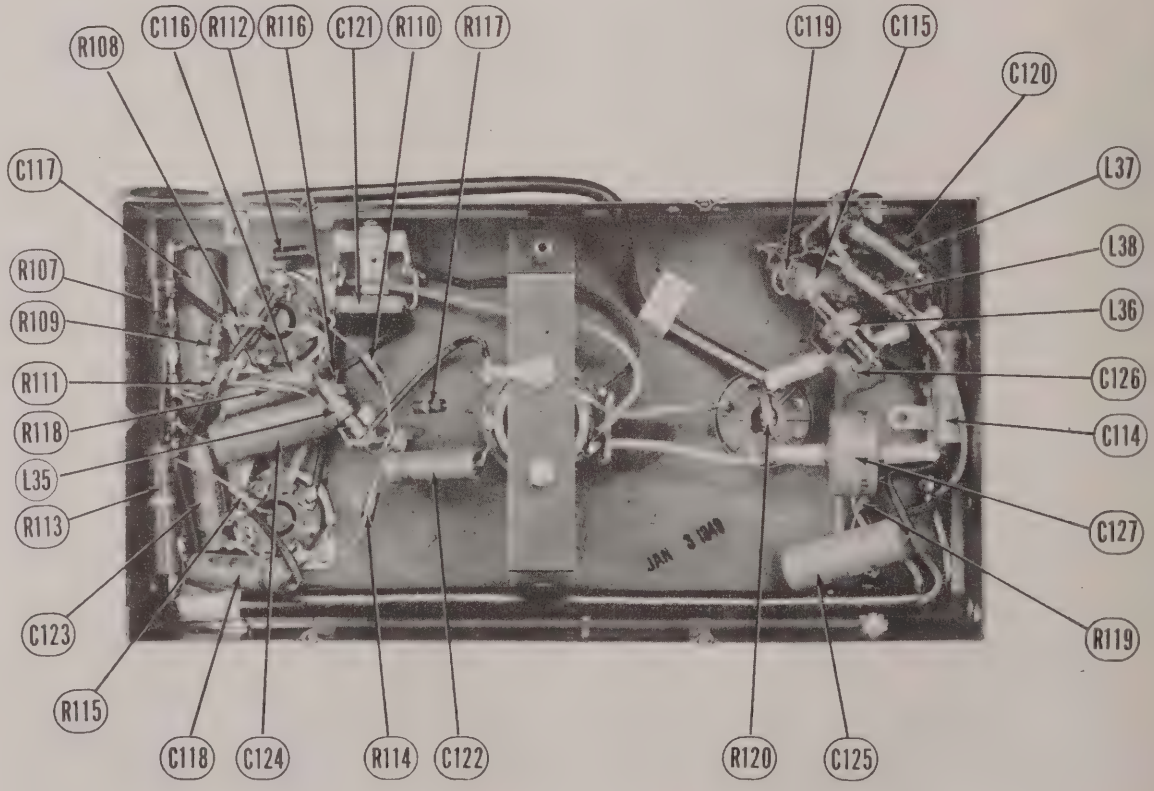




TUBE PLACEMENT CHART

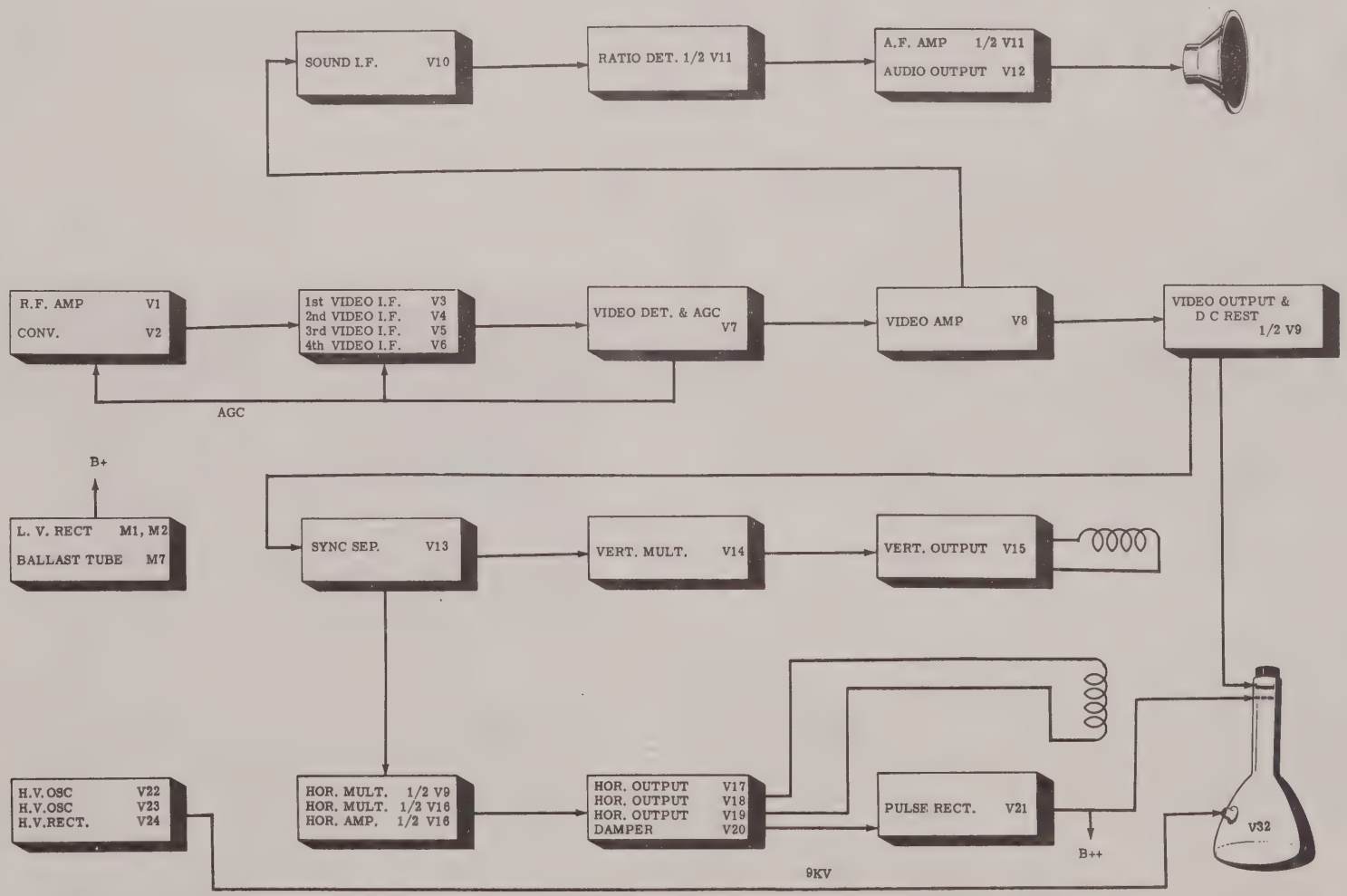


HIGH VOLTAGE SUPPLY-TOP VIEW



HIGH VOLTAGE SUPPLY-BOTTOM VIEW

RAYTHEON MODELS A-10DX24, B-10DX22, 10AXF23, 10DX21, 10DX22



BLOCK DIAGRAM

DISASSEMBLY INSTRUCTIONS-COMBINATION MODELS ONLY

1. Remove 5 push-on type knobs from TV controls.
2. Remove 7 phillips head screws holding left rear cover.
3. Remove picture tube base socket.
4. Remove tape and clamps from wires.
5. Remove focus coil plug from TV chassis.
6. Remove screw holding speaker plug in TV chassis. Remove speaker plug.
7. Disconnect wire grounding picture tube to chassis.
8. Remove HV lead from picture tube.
9. Remove plug from middle of TV chassis.
10. Remove plug from front corner of TV chassis.
11. Pull out power plug from socket near bottom of left side of cabinet.
12. Remove 2 phillips head screws holding HV cover to cabinet.
13. Remove screw from bottom center of TV chassis.
14. Push up and back to remove TV chassis.
15. Remove 4 phillips head screws holding speaker. Remove speaker.
16. Remove Ion trap from picture tube neck.
17. Remove forward wing nut under picture tube focus coil yoke. Remove yoke.
18. Remove 2 5/16" hex nuts holding side braces to picture tube rear support.
19. Remove screws and half moon clamp over deflection coil yoke. Remove yoke.
20. Remove left side brace top screw and screw located 3 inches ahead of it.
21. Remove screw holding clamp around face of picture tube. Remove tube.
22. Remove 4 push-on type knobs from radio receiver controls.
23. Remove 7 tacks holding antenna to light rear cover.
24. Remove 18 screws holding right rear cover. Remove cover.
25. Remove 3 1/4" hex nuts from paper cover over receiver chassis.
26. Remove phono power plug from receiver chassis.
27. Remove phono audio plug from receiver chassis.
28. Remove FM antenna leads from receiver chassis.
29. Remove AM antenna leads from loop antenna.
30. Remove two mounting screws and pull out receiver chassis.

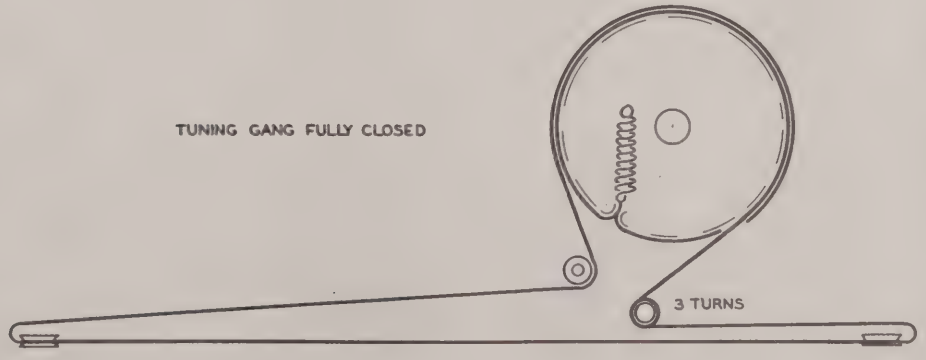
HORIZONTAL OSCILLATOR ADJUSTMENT

Set the horizontal hold control to the midpoint of its range. Turn the horizontal stability coil slug (B1) until the picture "syncs" horizontally.

PRODUCTION CHANGE

In early models of this receiver, the stabilizing oscillator coil was not used. The change of this horizontal-multivibrator circuit was incorporated to improve the horizontal synchronization.

DIAL CORD STRINGING



PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH6	6BH6	22M	
V2	Converter	6J6	6J6	7BF	
V3	1st Video and Sound IF Amp.	12AU6	12AU6	7BK	
V4	2nd Video IF Amp.	12AU6	12AU6	7BK	
V5	3rd Video IF Amp.	12AU6	12AU6	7BK	
V6	4th Video IF Amp.	12AU6	12AU6	7BK	
V7	Video Detector	12AU7	12AU7	8BT	
V8	Video Amp.	12AU6	12AU6	7BK	
V9	Sync. Separator-Sync. Inverter-Vert. Multivibrator	12SN7GT	12SN7GT	9AD	
V10	Vert. Output	50L6GT	50L6GT	7AC	
V11	Horizontal Multivibrator-Amp.	12SN7GT	12SN7GT	9AD	
V12	Horiz. Output	50B5	50B5	7BL	
V13	Damper	50B5	50B5	7BL	
V14	Sound Det.	12AU7	12AU7	8BT	
V15	1st Audio	12AV6	12AV6	7AT	
V16	Audio Output	50L6GT	50L6GT	7AC	
V17	Sound Rect.	35Z5GT	35Z5GT	6AD	
V18	Sound Det.-1st Audio-Amp.	12AV6	12AV6	7AT	
V19	Audio Output	50L6GT	50L6GT	7AC	
V20	Picture Tube	10BP4	10BP4	12D	
V21	Picture Tube	10FP4	10FP4	12D	
V22	HV Rectifier	1B3GT	1B3GT	8C	
V23	FM RF Amp.-Mixer	12AT7	12AT7	9A	
V24	AM Converter-FM Osc.	12BA7	12BA7	8CT	
V25	1st IF Amp.	12BA6	12BA6	7BK	
V26	2nd IF Amp.	12AU6	12AU6	7BK	
V27	Det.-Sync.	12AL5	12AL5	6BT	
V28	1st Audio-AF Amp.	12AV6	12AV6	7BT	
V29	Audio Output	50L6GT	50L6GT	7AC	
V30	Picture Tube	10BP4	10BP4	12D	
V31	Picture Tube	10FP4	10FP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	400	150	B-8C-16052	AFH80D			D-13041	Filter
C2	400	150	B-8C-16053	AFH80D			D-13041	Filter
C3A	40	150	A-8C-10077	AF844D	UP42215		D-13000	■ Filter
B	25	150						▲ Hor. Multi. Dec.
C	20	150						■ Vert. Amp. Screen Dec.
C4A	150	25	A-8C-16159	AP3010A	UP4BJ		D-13043	■ Vert. Output Cath. Byp
B	50	25			1387			▲ Output Cath. Byp.
C5	500	3	B-8C-16417	PRS6/500	UP1AJ		TVA-4	Video Amp. Cath. Bypass
					217			
C6	8	300	A-8C-16450	PRS350/8	BR8S5		UT-83	Pulse Rect. Filter
C7	10	50	A-8C-13132	PRS50/10	5BR10-50T		TVA-14	Sync. Sep. Cath. Byp.
C8	10	50	A-8C-16761	PRS50/10	5BR10-50T		TVA-14	Stabilizing Cap.
C9	10	150	A-8C-11495	PRS150/12	BR101S		UT-121	Dyn. Limiter Cap.
C10A	40	300	A-8C-16432	AFH844G5A	UP9DJ			▲ Filter
		-1			56§			
B	20	300			BR252A			■ Filter
	20	300						▲ Filter
C11	25	25						Output Cath. Bypass
C11	60	150	A-8C-16370	AF12F	UP3315§			Voltage Doubler Cap.
C12	5	100	C-8C-16013	PRS150/4	BR415		TVA-13	Stabilizing Cap.
C13	220		C-8G-16045			GP2K-250		Ant. Coupling
C14	220		C-8G-16045			GP2K-250		" "
C15	220		C-8G-16045			GP2K-250		RF Coupling
C16	220		C-8G-16045			GP2K-250		" "
C17	1000		C-8G-13201			GP2L-001		RF Screen Bypass
C18	1000		C-8G-13201			GP2L-001		RF Supp. Bypass
C19	1000		C-8G-13201			GP2L-001		RF Bypass
C20	1000		C-8G-13201			GP2L-001		" "
C21	1000		C-8G-13201			GP2L-001		" "
C22	1000		C-8G-13201			GP2L-001		RF Plate Decoupling
C23	.5		A-8G-12495					RF Coupling
		-7						
C24	.5		A-8G-12495					" "
		-7						
C25	1		A-8G-12495					" "
		-2						
C26	1000		C-8G-13201			GP2L-001		RF Bypass
C27	2.2		A-8G-12495					Osc. Coupling
		-4						
C28	51		C-8G-11891			GP1K-50		Osc. Feedback
C29	51		C-8G-11891			GP1K-50		Osc. Grid Cap.
C30	7		C-8G-15224					Fixed Trimmer
C31	2.5		C-8G-15737					Osc. Feedback
C32	10		C-8G-11789			GP1K-10		Voltage Divider
C33	1000		C-8G-13201			GP2L-001		RF Bypass
C34	220		C-8G-16045			GP2K-250		RF Fil. Bypass
C35	220		C-8G-16045			GP2K-250		" "
C36	220		C-8G-16045			GP2K-250		Conv. Fil. Bypass
C37	220		C-8G-16045			GP2K-250		" "

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C38	47	500	C-8F3-109	1469-00005	5W5Q5	GP1K-50	1FM-45	IF Coupling
C39	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	Conv. Plate Decoupling
C40	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C41	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C42	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	1st IF Supp. Bypass
C43	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	1st IF Decoupling
C44	100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	1st IF Fil. Bypass
C45	47	500	C-8F3-109	1469-00005	5W5Q5	GP1K-50	1FM-45	IF Coupling
C46	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C47	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C48	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	2nd IF Supp. Bypass
C49	100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	2nd IF Fil. Bypass
C50	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	2nd IF Decoupling
C51	47	500	C-8F3-109	1469-00005	5W5Q5	GP1K-50	1FM-45	IF Coupling
C52	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C53	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C54	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	3rd IF Supp. Bypass
C55	100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	3rd IF Fil. Bypass
C56	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	3rd IF Decoupling
C57	.47	500	C-8F3-109	1468-00005	5W5Q5	GP1K-50	1FM-45	IF Coupling
C58	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C59	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	4th IF Cath. Bypass
C60	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	4th IF Supp. Bypass
C61	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	4th IF Decoupling
C62	100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	4th IF Fil. Bypass
C63	100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C64	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	RF Bypass
C65	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C66	1.0	200	C-8D-16214	484-1.0	DT2W1		TC-10	" "
C67	5		C-8G-12166	1468-000005	5W5V5	NPOK-5	TS-55	V. Diode Filter
C68	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C69	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	V. Det. Fil. Bypass
C70	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	V. Det. Fil. Bypass
C71	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	Video Coupling
C72	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	V. Amp. Screen Dec.
C73	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	Video Coupling
C74	.1	200		P288-1	DT2P1		TM-1	Pic. Tube Grid Filter
C75	47		C-8G-12198	1468-00005	5W5Q5	GP1K-50	1FM-45	S. IF Coupling
C76	1500		C-8G-11731	1467-0015	1W5D15	GP2L-0015	1FM-215	S. IF Decoupling
C77	220		C-8G-16045	1468-00025	5W5T25	GP2K-250	1FM-325	S. IF Fil. Bypass
C78	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	S. IF Coupling
C79	220	500	C-8F3-117	1468-0002	5W5T2	GP2K-200	1FM-32	Diode Load Cap.
C80	470	500	C-8F3-12	1468-0006	5W5T6	GP2K-500	1FM-35	RF Bypass
C81	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	Isolation
C82	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	Vol. Cont. Isolation
C83	.002	600	C-8D-10778	P688-002	DT6D2	GP2M-002	TM-22	Audio Coupling
C84	220	500	C-8F3-10	1468-0002	5W5T2	GP2K-200	1FM-325	AF Grid Bypass
C85	220	500	C-8F3-10	1468-0002	5W5T2	GP2K-200	1FM-325	AF Plate Bypass
C86	1500		C-8G-11731	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C87	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	Audio Coupling
C88	1500		C-8G-11731	1467-0015	1W5D15	GP2L-0015	1FM-215	De-emphasis
C89	.001	600	C-8D-12020	P688-001	DT6D1	GP2L-001	TM-21	Output Plate Bypass
C90	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	AGC Filter *
C91	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	Video Coupling
C92	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	Sync. Coupling
C93	.005	600	C-8D-10935	P688-005	DT6D5	GP2M-005	TM-25	Integrator Net.
C94	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	" "
C95	.01	400	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	Vert. Multi. Feedback
C96	470	500	C-8F3-12	1468-0005	5W5T5	GP2K-500	1FM-35	Vert. Multi. Plate Byp.
C97	.2	400	C-8D-16681	P488-22	DT4P2		56P33	Vert. Discharge
C98	.2	400	C-8D-10942	P488-22	DT4P2		56P33	Vert. Sweep Coupling
C99	.25	200	C-8D-16680	P488-25	DT2P25		TC-2	Vert. Pulse Forming
C100	470	500	C-8F3-121	1468-0005	5W5T5	GP2K-500	1FM-35	Hor. Sync. Coupling
C101	56	500	C-8F1-110					Hor. Multi. Feedback
C102	3300	500	C-8F1-131					Fixed Trimmer +
C103	47	500	C-8F3-109	1469-00005	5R5Q5	GP1K-50	MS-45	Hor. Discharge †
C104	470	500	C-8F3-12	1468-0005	5W5T5	GP2K-500	1FM-35	Hor. Sweep Coupling
C105	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	" " "
C106	.05	400	C-8D-10775	P488-25	DT4P25		TC-2	Hor. Output Screen Byp.
C107	150	500	C-8F1-9	1468-00015	5W5T15	GP2K-150	1FM-315	Hor. Sync. Coupling ‡
C108	.5	200	C-8D-16679	P288-5	DT2P5		TC-5	Damper Filter
C109	.25	200	C-8D-16680	P488-25	DT2P25		TC-2	Hor. Sweep Coupling
C110	330	1000	C-8F14-119					Fixed Trimmer
C111	.1	600		P688-1	DT6P1		TM-1	RF Bypass
C112	.5	200	C-8D-16679	P288-5	DT2P5		TC-5	" "
C113	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	Cont. Control Bypass
C114	.02	200	C-8D-11304	P488-02	DT2S2		TM-12	HV Osc. Fil. Bypass
C115	.02	200	C-8D-11304	P488-02	DT2S2		TM-12	" " "
C116	.01	200	C-8D-16678	P488-01	DT2S1	GP2-335-01	TM-11	HV Osc. Grid Cap.
C117	.1	200	C-8D-10771	P288-1	DT2P1		TM-1	Bias Filter
C118	.02	200	C-8D-11304	P488-02	DT2S2		TM-12	" "
C119	.02	200	C-8D-11304	P488-02	DT2S2		TM-12	" "
C120	.02	200	C-8D-16677	P488-02	DT2S2		TM-12	RF Bypass
C121	560	500	C-8F5-122					HV Osc. Decoupling
C122	.01	200	C-8D-16678	P488-01	DT2S1	GP2-335-01	TM-11	Fixed Trimmer
C123	.02	200	C-8D-16677	P488-02	DT2S2		TM-12	HV Osc. Feedback
C124	.1	200	C-8D-16676	P288-1	DT2P1		TM-1	HV Osc. Screen Byp.
C125	.1	200	C-8D-16676	P288-1	DT2P1		TM-1	Isolation
C126	500	10000	A-8G-16078					"
C127	500	10000	A-8G-16078					HV Filter
C128	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	" "
C129	.05	600	C-8D-10982	P688-05	DT2S5		TM-15	RF Bypass
C130	.01	400	C-8D-10761	P488-01	DT4S1		TM-11	Line Isolation
C131	.01	200	C-8D-11738	P488-01	DT2S1	GP2-335-01	TM-11	Line Filter
C132	470		C-8G-11732	1468-0005	5W5T5	GP2K-500	1FM-35	RF Bypass *
C133	470		C-8G-11732	1468-0005	5W5T5	GP2K-500	1FM-35	Ant. Coupling
C134	470		C-8G-11732	1468-0005	5W5T5	GP2K-500	1FM-35	Ant. Isolation
C135	100		C-8G-11166	1468-0001	5W5T1	GP1K-100	1FM-31	FM RF Cath. Bypass
C136	470		C-8G-11732	1468-0005	5W5T5	GP2K-500	1FM-35	RF Bypass
C137	100		C-8G-12166	1468-0001	5W5T1	GP1K-100	1FM-31	FM RF Plate Dec.
C138	100		C-8G-12166	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C139	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	"
C140	2.2		C-8G-12495					FM Mixer Cath. Bypass
			-4					Osc. Coupling
C141	.05	200	C-8D-10770	P288-05	DT2S5		TM-15	AVC Filter
C142	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	" "
C143	33		C-8G-14172	1468-00004	5W5Q4	NPOL-33	1FM-44	RF Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C144	100		C-8G-12166	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C145	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	" "
C146	5		A-8G-13962	1468-00000	5W5V5	NPOK-5	TS-55	Osc. Feedback
C147	33		C-8G-14172	1468-00004	5W5Q4	NPOL-33	1FM-44	Osc. Grid Cap.
C148	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	Osc. Anode Bypass
C149	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	Conv. Plate Decoupling
C150	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	RF Bypass
C151	100		C-8G-12166	1468-0001	5W5T1	GP1K-100	1FM-31	Conv. Fil. Bypass
C152	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	1st IF Cath. Bypass
C153	2000		C-8G-16049	1467-002	1W5D2	GP2M-002	1FM-22	1st IF Decoupling
C154	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	1st IF Fil. Bypass
C155	220		C-8G-11733	1468-00025	5W5T25	GP2K-250	1FM-325	Diode RF Filter
C156	220		C-8G-11733	1468-00025	5W5T25	GP2K-250	1FM-325	2nd IF Grid Filter
C157	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	2nd IF Supp. Bypass
C158	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	2nd. IF Cath. Bypass
C159	2000		C-8G-12166	1467-002	1W5D2	GP2M-002	1FM-22	2nd IF Decoupling
C160	390	500	C-8F3-120	1468-0004	5W5T4	GP2K-300	1FM-34	Diode Load Cap.
C161	2000		C-8G-13962	1467-002	1W5D2	GP2M-002	1FM-22	De-emphasis
C162	330	500	C-8F3-11	1468-00035	5W5T3	GP2K-300	1FM-335	RF Bypass
C163	220		C-8G-11733	1468-00025	5W5T25	GP2K-250	1FM-325	" "
C164	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	2nd IF Fil. Bypass
C165	.01	400	C-8D-10761	P488-01	DT4S1	GP2-335-01	TM-11	Audio Coupling
C166	.05	400	C-8D-10770	P488-05	DT4S5		TM-15	Phono Isolation
C167	.01	400	C-8D-10761	P488-01	DT4S1	GP2-335-01	TM-11	Audio Coupling
C168	220		C-8G-11733	1468-00025	5W5T25	GP2K-250	1FM-325	AF Plate Bypass
C169	.01	400	C-8D-10761	P488-01	DT4S1	GP2-335-01	TM-11	Tone Compensation
C170	.01	400	C-8D-10761	P488-01	DT4S1	GP2-335-01	TM-11	Audio Coupling
C171	.005	600	C-8D-10935	P688-005	DT6D5	GP2M-005	TM-25	Output Plate Bypass
C172	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	RF Bypass
C173	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	AM DET-AF Fil. Bypass
C174	.15	400	C-8D-16791	P488-15	DT4P2		TM-2	Line Isolation
C175	.05	400	C-8D-10813	P488-05	DT4S5		TM-15	Line Filter
C176	330	500	C-8F3-11	1468-00035	5W5T3	GP2K-300	1FM-335	RF Bypass *
C177	330	500	C-8F3-11	1468-00035	5W5T3	GP2K-300	1FM-335	" " *

* Not used in all models.
† Early production models use 82MTF in this application.
‡ Not used in early production models.
§ Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	A-10A-16168	Q13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SW-A	" " " "
R2A	250KΩ	½	A-10B-16165	Q11-130	AM-56-S	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions.
R3A	50KΩ	½	A-10B-16167	Q11-123	AM-44-S	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A Per Instructions
R4	20000Ω	2	B-10B-16555			Contrast Control (Wire Wound)
R5	2000Ω	2	A-10B-16163	W-2000	43-2000	Width Control Wire Wound
R6	500KΩ	½	A-10B-16164	Q11-133		Vert. Hold Control
R7	500KΩ	½	A-10B-16164	Q11-133		Height control
R8	10KΩ	½	A-10B-16629			Focus Control Wire Wound
R9	2000Ω	2	A-10B-16162	W-2000	43-2000	Vert. Linearity Control Wire Wound
R10A	1 Meg.	½	A-11B-16166	Q13-137	AM-63-Z	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R10A Per Instructions
R11A	1 Meg.	½	A-10A-16503	Q13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R11A Per Instructions
C	Switch		Not Req.	76-1	SW-A	" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BELMONT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R12	100KΩ	½	C-9B1-86		RF Grid
R13	68Ω	½	C-9B1-48		RF Cathode
R14	56000Ω	½	C-9B1-71		RF Supp. Grid
R15	10000Ω	½	C-9B1-13		RF Screen Decoupling 20%
R16	56000Ω	½	C-9B1-71		RF Plate Decoupling
R17	56000Ω	½	C-9B1-71		RF Coil Shunt
R18	10KΩ	½	C-9B1-74		Conv. Grid
R19	10000Ω	½	C-9B1-13		Conv. Plate Decoupling 20%
R20	220Ω	½	C-9B1-54		Conv. Cathode
R21	10KΩ	½	C-9B1-74		Conv. Grid Coil Shunt
R22	10KΩ	½	C-9B1-74		Osc. Grid
R23	56000Ω	½	C-9B1-71		Osc. Plate
R24	10Ω	½	C-9B1-38		Parasitic Supp.
R25	10Ω	½	C-9B1-38		" "
R26	56000Ω	½	C-9B1-71		1st Video IF Grid
R27	82Ω	½	C-9B1-49		1st Video IF Cathode
R28	56000Ω	½	C-9B1-71	BTS-5600	1st Video IF Supp. Grid
R29	10000Ω	½	C-9B1-13	BTS-1000	1st Video IF Decoupling
R30	10000Ω	½	C-9B1-13	BTS-1000	AGC Network
R31	10000Ω	½	C-9B1-13	BTS-1000	" "
R32	82000Ω	½	C-9B1-73		2nd Video IF Grid
R33	82Ω	½	C-9B1-49		2nd Video IF Cathode
R34	56000Ω	½	C-9B1-71	BTS-5600	2nd Video IF Supp. Grid
R35	10000Ω	½	C-9B1-13	BTS-1000	2nd Video IF Decoupling 20%
R36	10000Ω	½	C-9B1-13	BTS-1000	AGC Network
R37	56000Ω	½	C-9B1-71	BTS-5600	3rd Video IF Grid
R38	82Ω	½	C-9B1-49		3rd Video IF Cathode
R39	56000Ω	½	C-9B1-71	BTS-5600	3rd Video IF Supp. Grid
R40	10000Ω	½	C-9B1-13	BTS-1000	3rd Video IF Decoupling 20%
R41	82000Ω	½	C-9B1-73		3rd Video IF Transformer Shunt
R42	68Ω	½	C-9B1-48		4th Video IF Cathode
R43	56000Ω	½	C-9B1-71	BTS-5600	4th Video IF Supp. Grid
R44	10000Ω	½	C-9B1-13	BTS-1000	4th Video IF Decoupling 20%
R45	47KΩ	½	C-9B1-82	BTS-47K	AGC Diode Load
R46	100KΩ	½	C-9B1-25	BTS-100K	AGC Network
R47	68Ω	½	C-9B1-48		Isolation
R48	82KΩ	½	C-9B1-85	BTS-82K	Voltage Divider

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	BELMONT PART No.	IRC PART No.		
R49	8200Ω	½	C-9B1-73	BTS-8200	Video Det. Diode Load	
R50	100Ω	½	C-9B1-7		Parasitic Supp.	
R51	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Video Amp. Grid	
R52	120Ω	½	C-9B1-51		Video Amp. Cathode	
R53	10KΩ	½	C-9B1-19	BTS-10K	Filter	20%
R54	8200Ω	1	C-9B1-73	BTA-8200	Video Amp. Plate	
R55	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Video Output Grid	20%
R56	12KΩ	½	C-9B1-75	BTS-12K	Video Output Cathode	
R57	470KΩ	½	C-9B1-29		Sound IF Grid	20%
R58	1000Ω	½	C-9B1-13		Sound IF Decoupling	20%
R59	10KΩ	½	C-9B1-19	BTS-10K	De-emphasis	
R60	33KΩ	½	C-9B1-80	BTS-33K	Ratio Det. Diode Load	
R61	33KΩ	½	C-9B1-80	BTS-33K	" " " "	
R62	10 Meg.	½	C-9B1-37	BTS-10 Meg.	AF Grid	
R63	470KΩ	½	C-9B1-29	BTS-470K	AF Plate	
R64	22KΩ	½	C-9B1-78	BTS-22K	Tone Compensation	
R65	470KΩ	½	C-9B1-29	BTS-470K	Output Grid	20%
R66	180Ω	1	C-9B2-53	BW-1-180	Output Cathode	
R67	560Ω	2	C-9B4-59	BT-2-560	Filter	
R68	270Ω	½	C-9B1-55	BW-½-270	Sync. Sep. Cathode	
R69	22KΩ	½	C-9B1-78	BTS-22K	" " "	
R70	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Sync. Sep. Grid	20%
R71	220KΩ	½	C-9B1-27	BTS-220K	Sync. Sep. Plate	20%
R72	10KΩ	½	C-9B1-19	BTS-10K	Phase Correction	20%
R73	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Voltage Divider	
R74	56KΩ	½	C-9B1-83	BTS-56K	" "	
R75	180KΩ	½	C-9B1-89	BTS-180K	Sync. Coupling Network	
R76	4700Ω	½	C-9B1-17	BTS-4700	Integrator	20%
R77	4700Ω	½	C-9B1-17	BTS-4700	Integrator	20%
C78	1000Ω	½	C-9B1-13	BTS-1000	Vert. MV Cathode	
R79	100KΩ	½	C-9B1-13	BTS-100K	Vert. MV Plate	20%
R80	390KΩ	½	C-9B1-221	BTS-390K	Vert. MV Grid	
R81	150KΩ	½	C-9B1-26	BTS-150K	Vert. MV Plate	
R82	2200Ω	½	C-9B1-15	BTS-2200	Vert. Peaking	20%
R83	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Vert. Output Grid	20%
R84	150Ω	½	C-9B1-52	BW-½-150	Vert. Output Cathode	
R85	470KΩ	½	C-9B1-29	BTS-470K	Vert. Output Plate	
R86	18KΩ	½	C-9B1-77	BTS-18K	Feedback	
R87	470Ω	½	C-9B1-29	BTS-470	Voltage Divider	
R88	330Ω	½	C-9B1-56	BW-½-330	Differentiator See Note 1	
R89	18KΩ	½	C-9B1-77	BTS-18K	Horiz. MV Grid	
R90	1800Ω	½	C-9B1-65	BTS-1800	Horiz. MV Plate See Note 2	
R91	270Ω	½	C-9B1-55	BW-½-270	Horiz. MV Cathode	
R92	560KΩ	½	C-9B1-225	BTS-560K-5%	Horiz. MV Grid	5%
R93	330KΩ	½	C-9B1-92	BTS-330K	Voltage Divider See Note 3	
R94	2200Ω	½	C-9B1-15	BTS-2200	Filter	20%
R95	3.9 Meg.	½	C-9B1-105	BTS-3.9 Meg.	Horiz. Amp. Grid	
R96	220KΩ	½	C-9B1-27	BTS-220K	Horiz. Amp. Plate See Note 4	20%
R97	100Ω	½	C-9B1-7		Parasitic Supp.	20%
R98	100Ω	½	C-9B1-7		" "	20%
R99	100Ω	½	C-9B1-7		Parasitic Supp.	20%
R100	100Ω	½	C-9B1-7		" "	20%
R101	100Ω	½	C-9B1-7		" "	20%
R102	100Ω	½	C-9B1-7		" "	20%
R103	39KΩ	½	C-9B1-81	BTS-39K	Horiz. Output Grid See Note 5	
R104	220Ω	5	C-9C12-1091	AB-225	Damper Filter (Wire Wound)	
R105	47Ω	1	C-9B2-5	BW-1-47	" "	
R106	560Ω	2	C-9B4-59	BT-2-560	Focus Coil Shunt	
R107	10KΩ	½	C-9B1-19	BTS-10K	Filter	20%
R108	8200Ω	½	C-9B1-73	BTS-8200	HV Osc. Grid	
R109	1500Ω	½	C-9B1-73	BTS-1500	HV Osc. Grid	
R110	100Ω	½	C-9B1-7		Parasitic Supp.	20%
R111	100Ω	½	C-9B1-7		" "	20%
R112	10Ω	½	C-9B1-1		" "	20%
R113	3000Ω	2	C-9B4-170		HV Osc. Screen	5%
R114	100Ω	½	C-9B1-7		Parasitic Supp.	20%
R115	100Ω	½	C-9B1-7		" "	20%
R116	10Ω	½	C-9B1-1		" "	20%
R117	100KΩ	½	C-9B1-25	BTS-100K	Feedback	20%
R118	220KΩ	½	C-9B1-27	BTS-220K	Isolation	20%
R119	220KΩ	½	C-9B1-27	BTS-220K	"	20%
R120	470KΩ	½	C-9B1-29		HV Filter	20%
R121	150KΩ	½	C-9B1-26	BTS-150K	Isolation	
R122	220Ω	½	C-9B1-54		FM RF Cathode	
R123	470Ω	½	C-9B1-58	BTS-470	FM RF Plate Decoupling	
R124	680Ω	½	C-9B1-60	BTS-680	FM Mixer Cathode	
R125	150KΩ	½	C-9B1-26	BTS-150K	FM Mixer Grid	
R126	2.2 Meg.	½	C-9B1-33	BTS-2.2 Meg.	AM Conv. Grid	
R127	470Ω	½	C-9B1-58	BTS-470	Decoupling Network	
R128	22KΩ	½	C-9B1-58	BTS-22K	Osc. Grid	
R129	470Ω	½	C-9B1-58	BTS-470	Osc. Plate Decoupling	
R130	68Ω	½	C-9B1-48	BW-½-68	1st IF Cathode	
R131	470Ω	½	C-9B1-58	BTS-470	1st IF Decoupling	
R132	47KΩ	½	C-9B1-82	BTS-47K	Diode Filter	
R133	2.2 Meg.	½	C-9B1-33	BTS-2.2 Meg.	AVC Network	20%
R134	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Diode Load	20%
R135	150KΩ	½	C-9B1-26	BTS-150K	2nd FM IF Grid	20%
R136	220KΩ	½	C-9B1-27	BTS-220K	2nd FM IF Supp. Grid	20%
R137	68Ω	½	C-9B1-48	BW-½-68	2nd FM IF Cathode	
R138	470Ω	½	C-9B1-58	BTS-470	2nd FM IF Decoupling	
R139	27KΩ	½	C-9B1-79	BTS-27K	De-emphasis	
R140	22KΩ	½	C-9B1-78	BTS-22K	Ratio Det. Diode Load	
R141	6.8 Meg.	½	C-9B1-36	BTS-6.8 Meg.	AF Grid	20%
R142	470KΩ	½	C-9B1-94	BTS-470K	AF Plate	
R143	470KΩ	½	C-9B1-94	BTS-470K	Output Grid	
R144	150Ω	½	C-9B1-52	BW-½-150	Output Cathode	
R145	3600Ω	5		AB-3500	Filter (Wire Wound) See Note 6	
R146	500Ω	5		AB-500	" (Wire Wound) See Note 7	
R147	50Ω	5			Surge Limiter (Wire Wound) See Note 7	
R148	1800Ω	½	C-9B1-65	BTS-1800	Filament Shunt See Note 8	
R149	220KΩ	½	C-9B1-27	BTS-220K	Isolation	

Note 1. Early production models used 180Ω resistor in this application.
Note 2. Early production models used 33KΩ resistor in this application.
Note 3. Early production models used 120KΩ resistor in this application.
Note 4. Early production models used 33KΩ resistor in this application.
Note 5. Early production models used 100KΩ resistor in this application.
Note 6. Some models use two 1800Ω, 2W resistors in series to obtain correct resistance and wattage.
Note 7. Some models use two 1000Ω, 2W resistors in parallel to obtain correct resistance and wattage.
Note 8. Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	NOTES
T1	32Ω Tap @ 3Ω		B-16M-16157				Hor. Output Chk. Coil
T2	97Ω	6.3Ω	B-12C-16050		T80-4		Vert.Output Trans.
T3A	14.4Ω		B-13M-13590	DY-1			Hor.Deflection Coil
B	55Ω						Vert.Deflection Coil
T4	540Ω		B-13M-13589-2	FC-10			Focus Coil

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC. 1	RATING DC RESISTANCE SEC. 2	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	NOTES
T5	2.1Ω	450Ω	0Ω	B-201-16149				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.1	RATING IMPEDANCE SEC.	RATING DC RES. PRI.1	RATING DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T6	2700Ω PRI.2 3200Ω	3.6Ω	305Ω PRI.2 340Ω	.5Ω	Part of B-18A-16702				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 v)	REPLACEMENT DATA BELMONT PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
L1	.400A	10Ω	.37Henries	B-16A-1605-1				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA BELMONT PART No.	MEISSNER PART No.	NOTES
L2	Ant. Coil	0Ω		A-201-15676		
L3	Inductors	0Ω				No 18 Tinned Copper Wire, Straight Bare
L4	Inductors	0Ω				" " " " " " "
L5	RF Choke	.2Ω		A-16A-16637		
L6	RF Choke	.2Ω		A-16A-16637		
L7	RF Plate	0Ω		B-13E-12046		Low Band
L8	RF Plate	0Ω		B-13D-12155		High Band
L9	RF Choke	.2Ω		A-16A-16773		
L10	Mixer Grid	0Ω		B-13E-12046		Low Band
L11	Mixer Grid	0Ω		B-13D-12155		High Band
L12	RF Choke	.2Ω		A-16A-16637		
L13	RF Choke	.2Ω		A-16A-16637		
L14	Osc. Coil	0Ω		B-13D-12155		Low Band
L15	Osc. Coil	0Ω		A-13D-12045		High Band
L16	RF Choke	.2Ω		A-201-15609		
L17	1st Video IF	.1Ω		B-201-15612		
L18	2nd Video IF	0Ω	0Ω	A-201-16329		Includes 47MMF condenser
L19	RF Choke	1Ω		A-201-15609		
L20	3rd Video IF	0Ω		B-201-15612		
L21	RF Choke	1Ω		A-201-15609		
L22	4th Video IF	0Ω		B-201-15612		
L23	RF Choke	1Ω		A-201-15609		
L24	RF Choke	1Ω		A-201-15608		
L25	RF Choke	1Ω		A-201-16379		
L26	5th Video IF	0Ω		B-201-16412		
L27	RF Choke	1Ω		A-201-15609		
L28	Peaking	5.5Ω		A-16A-16514		50 Microhenries. Wound on 3.3KΩ resistor.
L29	Peaking	30Ω		A-16A-16515		650 Microhenries wound on 47KΩ resistor.
L30	Peaking	22Ω		A-16A-16516		400 Microhenries.
L31	Sound IF	1.5Ω	2.8Ω	C-201-16411		
L32	Ratio Det. Trans.	4.5Ω	0Ω	B-13M-16335		
L33	RF Choke	12Ω		A-201-16379		
L34	Hor. Osc.	67Ω		A-13D-16943		Incorporated in sets which have "C" stamped on back, only.
L35	RF Choke	24Ω		A-201-16158		807 Microhenries
L36	RF Choke	24Ω		B-16A-13524		2.5 Microhenries
L37	Fil. Choke	.1Ω		A-201-16405		
L38	Fil. Choke	.1Ω		A-201-16405		
L39	Fil. Choke	0Ω		A-201-15608		
L40	Fil. Choke	0Ω		A-201-15608		
L41	Fil. Choke	0Ω		A-201-15608		
L42	Fil. Choke	0Ω		A-201-15608		
L43	Fil. Choke	0Ω		A-201-15608		
L44	Loop Ant.	1Ω		C-13E-16496		
L45	Par. Supp.	0Ω		A-16B-16616		14 turns wound on a resistor
L46	RF Choke	1.5Ω		A-16B-16613		
L47	FM Mixer	0Ω		A-13E-16618		
L48	FM Osc.	0Ω		A-13D-16611		
L49	RF Choke	2.5Ω		A-16B-16023		
L50	Par. Supp.	0Ω		A-16B-16615		2 1/2 turns wound on 22Ω resistor.
L51	AM Osc.	1Ω	5Ω	B-13D-16611	14-1060	
L52	Par. Supp.	0Ω		A-16B-16614		4 Turns wound on resistor.
L53	FM 1st IF	.5Ω	.1Ω	B-13A-16612		
L54	AM 1st IF	14Ω	14Ω	B-13A-16662	16-6678	
L55	FM 2nd IF	1.2Ω	1Ω	B-13B-16000		
L56	AM 2nd IF	14Ω	14Ω	B-13B-16302	16-6678	
L57	Ratio Det. Trans.	.8Ω	.1Ω	B-13M-16001		
L58	RF Choke	2.5Ω		A-16A-16637		
L59	Fil. Choke	0Ω		A-16B-16023		
L60	Fil. Choke	0Ω		A-16B-16023		

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELMONT PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-102		# Replace output transformer to match 6-8Ω voice coil.
SP1A	PM	3.6Ω	B-18A-16702††	MOD.P12-S#	12A6A	†† Used in model D1992
B	PM		C-18A-16473‡‡			‡‡ Used in model D1990
C	PM		B-18A-16440##			## Used in model D2987
	CONE DIA.	V. C. DIA.				
SP2A	11 3/4"	1"	††			
B	8"		‡‡			
C	5"		##			

SELENIUM RECTIFIER

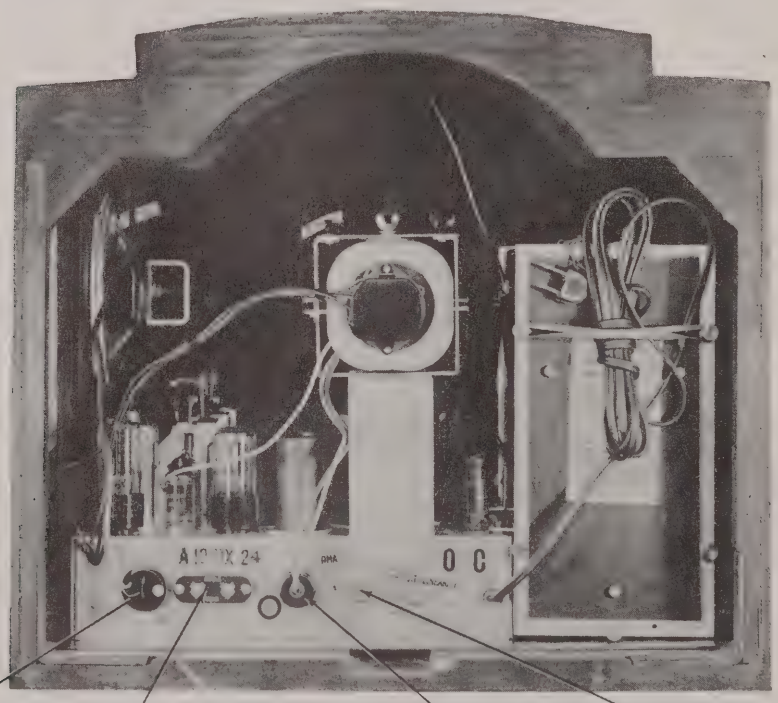
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	BELMONT PART No.			
M1	.179A	B-21J-16196			
M2	.179A	B-21J-16196			
M3	.069A	A-21J-12775			
M4	.069A	A-21J-12775			

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BELMONT PART No.		
M5	Bayonet				A-46A-16545		115V-125V 10W.

MISCELLANEOUS

ITEM No.	PART NAME	BELMONT PART No.	NOTES
M6	Band Switch	B-20A-16663	
M7	Ballast Tube	B-9M-16534	
M8	Ion Trap	B-16M-16195	
M9	Tuning Cap.	B-8A-16592	(16-477MMF, 17-178MMF) W/T
	Knob	B-5B-16698-57	Tuning, Radio Chassis, Model D1992
	Knob	B-5B-16699-57	Volume, Radio Chassis, Model D1992
	Knob	B-5B-16700-57	Tone, Radio Chassis, Model D1992
	Knob	B-5B-16701-57	FM-AM-PH, Radio Chassis, Model D1992
	Knob	B-5B-16348-57	Contrast, Brightness, Hor. Hold, Off-Volume TV Chassis, Models D1992 and D1990
	Knob	B-5B-16292-57	Station Selector, TV Chassis, Models D1992 and D1990.
	Knob	B-5B-16289-57	Contrast, Brightness, Hold Hold, Off-Volume. Model D2987.
	Knob	B-5B-16291-57	Station Selector, Model D2987
	Safety Glass	C-30M-16280-1	For Models D1992 and D1990
	Safety Glass	B-30M-16381	For Model D2987



CABINET-REAR VIEW

PHOTOFACT* Folder

STEWART-WARNER MODELS 9100A, B, C, D, E, F, G, H

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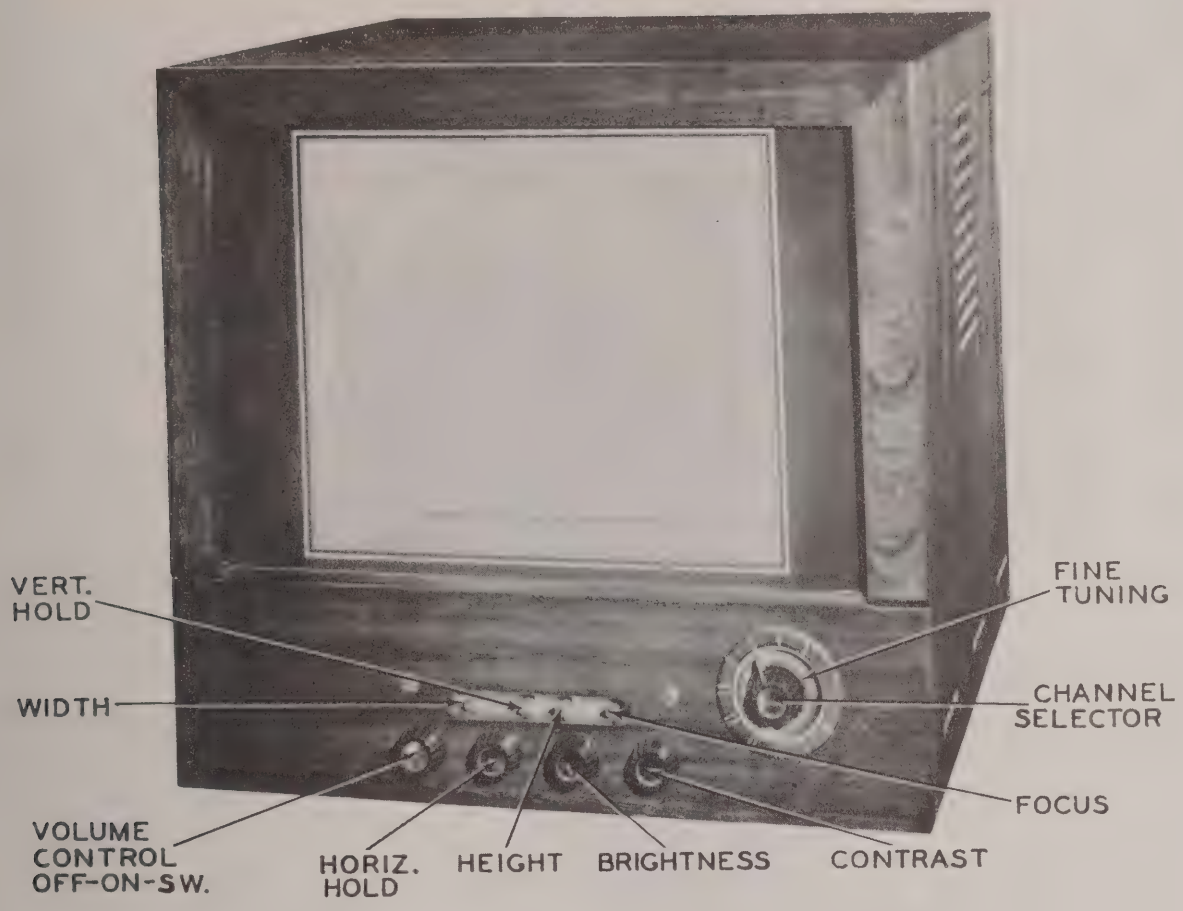

STEWART-WARNER MODELS 9100A, B, C, D, E, F, G, H

STEWART-WARNER MODEL 9100F

TRADE NAME	Stewart-Warner Models 9100A, B, C, D, E, F, G, H
MANUFACTURER	Stewart Warner Corp., 1826 Diversey Pkwy., Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Twenty Five
POWER SUPPLY	117 Volts AC — RATING. 1.59 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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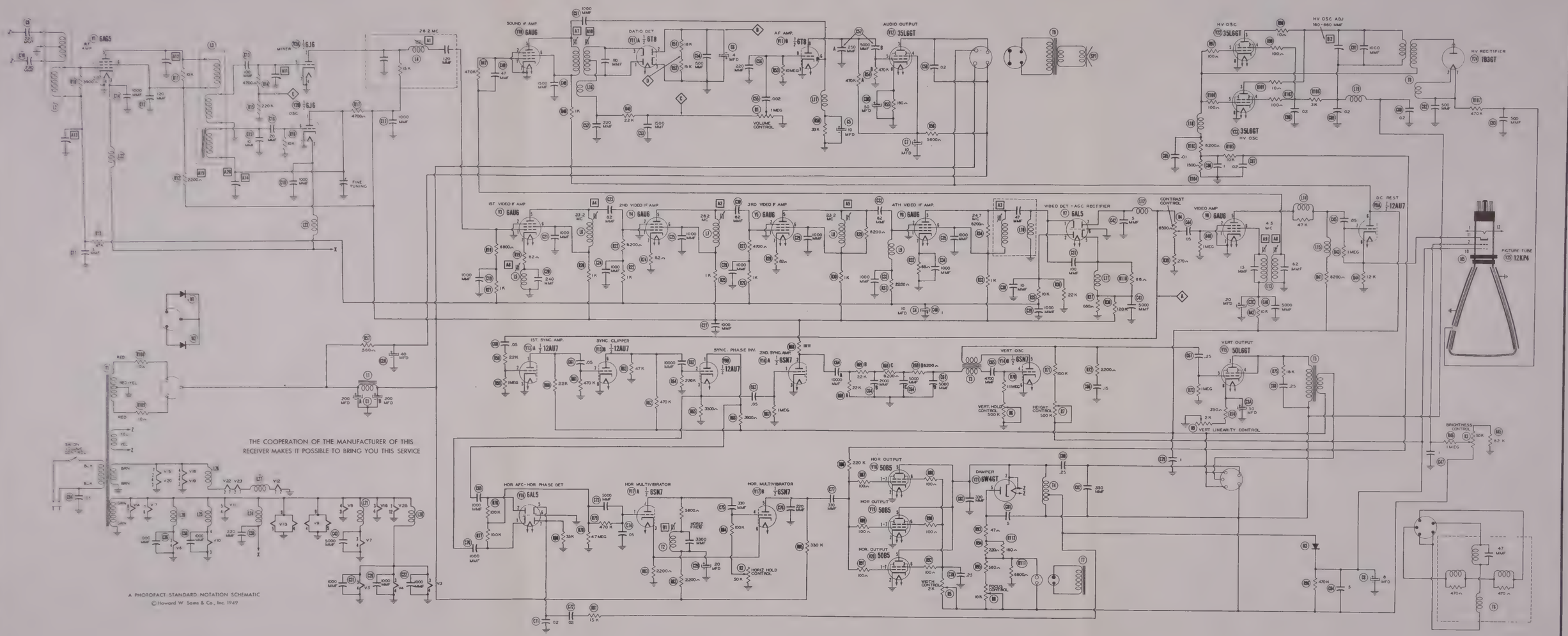
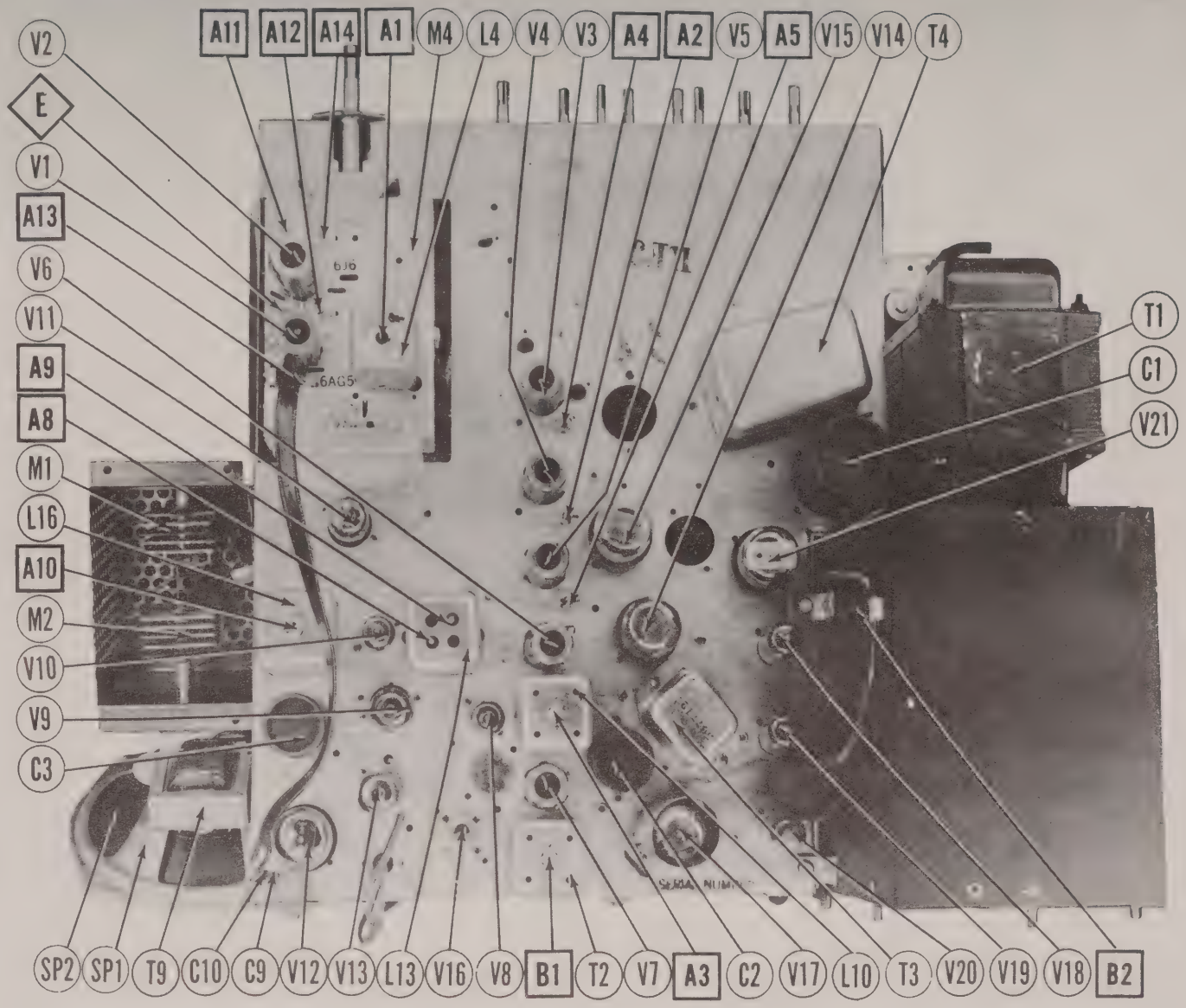
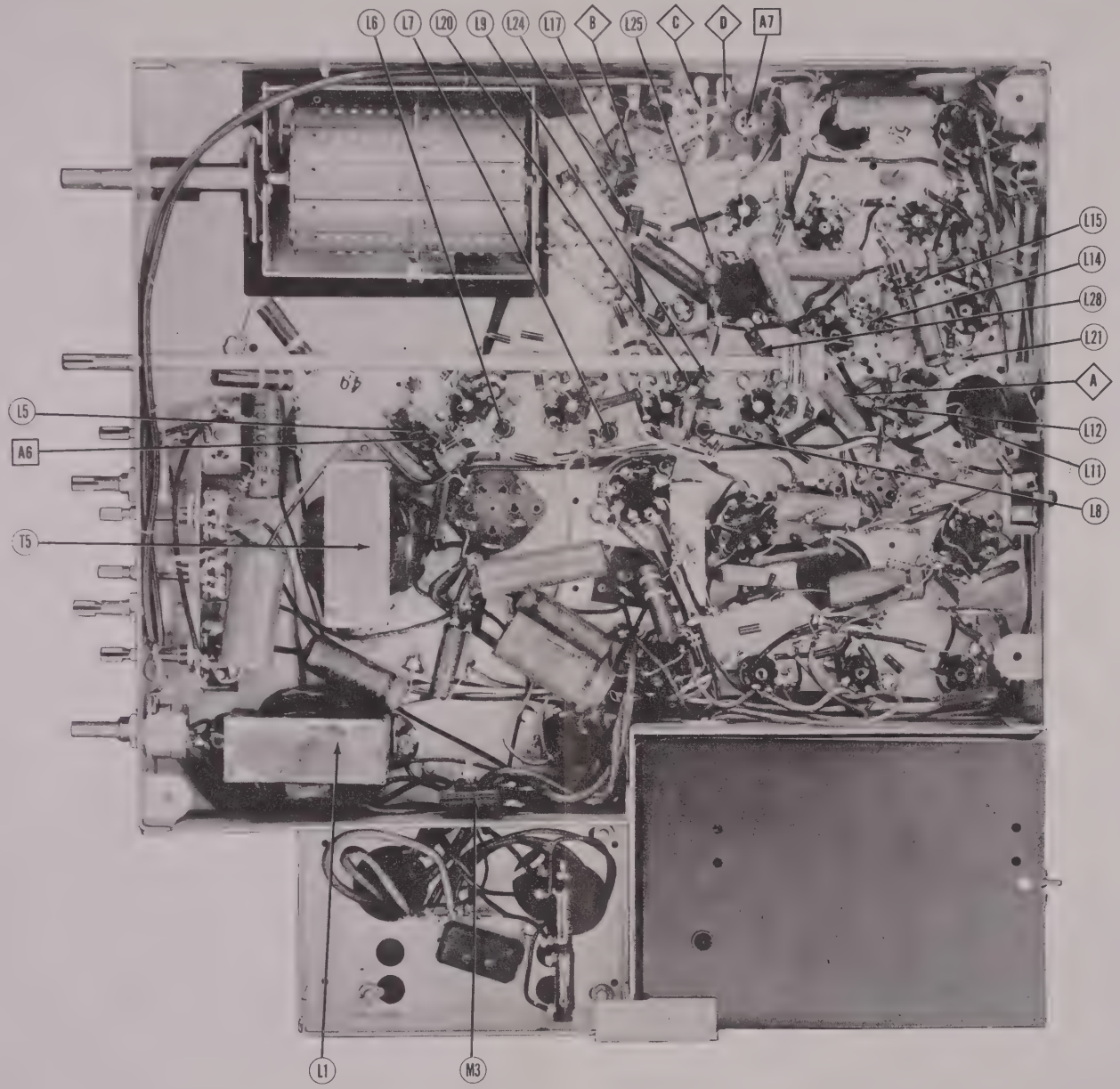
DATE 11/49 SET #75 FOLDER #15



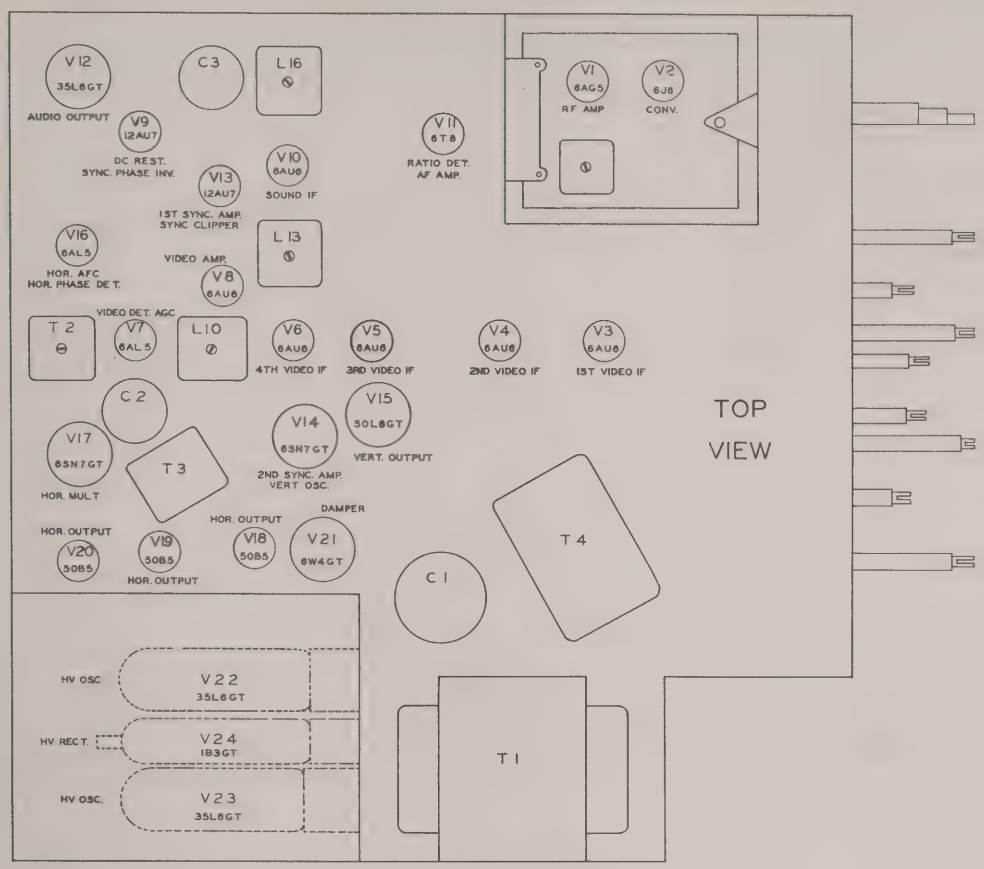
STEWART-WARNER MODELS
9100A, B, C, D, E, F, G, H

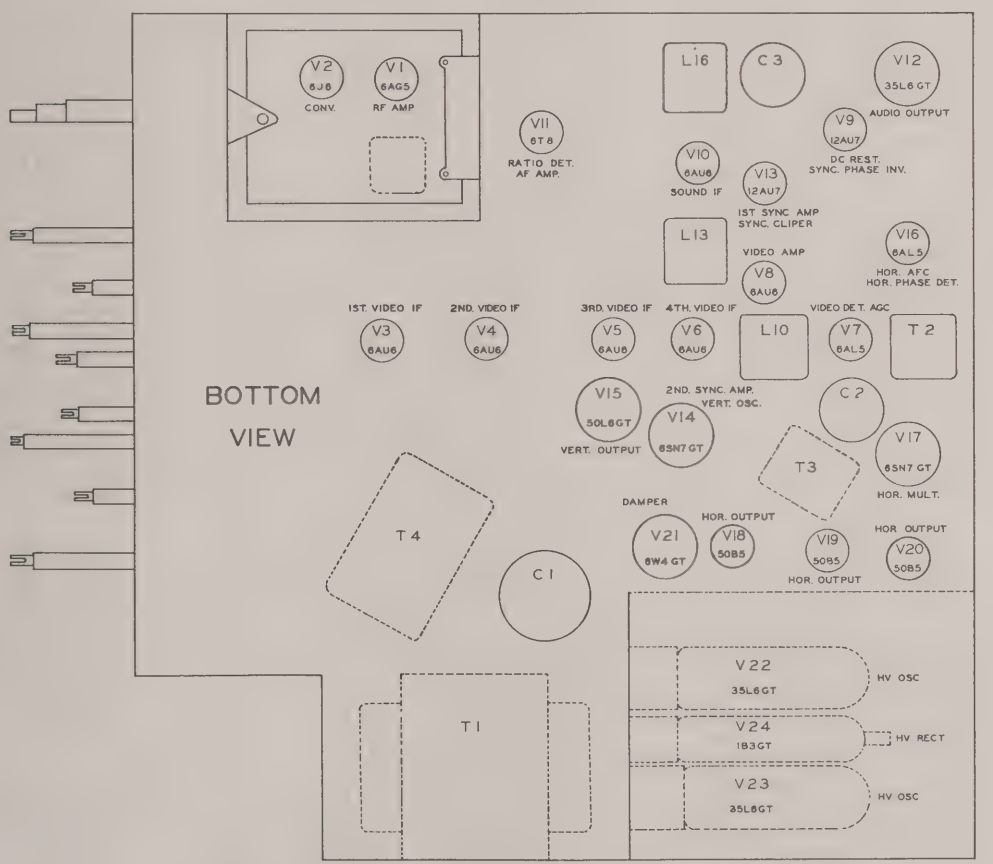


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The picture tube will have to be removed during alignment.
To remove high voltage shock hazard, tape the connector on the end of the high voltage lead.
Interconnection between components may be accomplished by the use of the following Stewart-Warner parts.

Part No. 507443 Extension cable-high voltage
507444 Extension cable-deflection yoke
507445 Extension cable-kinescope
507446 Extension cable-focus coil
507447 Extension cable-speaker

VIDEO IF ALIGNMENT

Remove the converter section of the channel 13 segment of the turret on the tuner. This is the front section. During IF alignment turn the channel selector switch to channel 13. This disables the local oscillator to prevent erroneous indications.

Connect the negative lead of a 1 1/2 volt battery to the junction of R35 and C39. Connect the positive lead to chassis.

To obtain proper results during alignment, short the trap coil A6 with a short piece of wire. Remove the short before performing step 4.

The use of Stewart-Warner IF alignment tool #507479 is recommended for use on IF adjustment screws.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over converter tube (V2). Low side to chassis.	26.3MC (Unmod.)	13 (See note above)	DC Probe thru 10KΩ to Point (A) Common to chassis.	A1,A2	Adjust for maximum deflection.
2.	Direct	"	24.7MC (Unmod.)	"	"	A3	"
3.	Direct	"	23.2MC (Unmod.)	"	"	A4,A5	"
4.	Direct	"	22.25MC (Unmod.)	"	"	A6	Expand or compress coil turns for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

If the oscilloscope does not have shielded input cable, connect 1000MMF capacitor across the vertical input terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over converter tube (V2). Low side to chassis.	25MC (10MC Sweep)	22.25MC 26.75MC	13 See note above—video IF alignment	Vert. Amp. thru 10KΩ to Point (A) Low side to chassis.		Check for response curve as per Fig 1. 26.75MC marker should be at 50% response. Use maximum marker output to check position of trap A6. If necessary retouch A1 thru A6 for optimum response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Turn contrast control to maximum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (Unmod.)	13	DC Probe to Point (B) Common to chassis.	A7,A8, A9	Adjust for maximum deflection.
7.	.01MFD	"	"	"	DC Probe to Point (C) Common to Point (D)	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

Turn contrast control to maximum.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	13	Vert. Amp. to Point (B) Low side to chassis.	A7,A8, A9	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per Fig 2.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A10,A7	Adjust A10 so 4.5MC marker occurs at center of crossover lines as per Fig 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

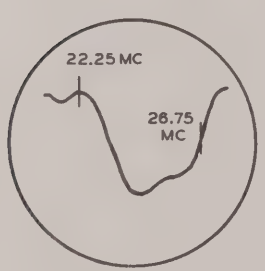


FIG. 1

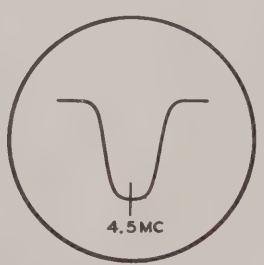


FIG. 2

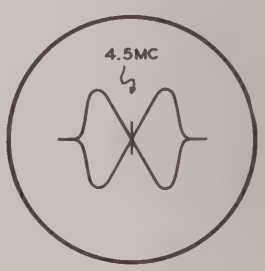


FIG. 3

RF ALIGNMENT

Replace the channel 13 converter coils.
Leave the 1 1/2 battery connected the same as for video IF alignment.
The output of the signal generator lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminal with 120Ω in each lead.	207MC (10MC Sweep)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point (E) Low side to chassis.	A11, A12, A13	Adjust for response approximately similar to Fig 4. Markers should be above 70%.
9.	"	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"		Check all channels for proper response as per Fig 4. If optimum results are desired for any channel adjust A11, A12 and A13 for best results with channel switch set at that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Sweep)	199.25MC 203.75MC	11			
			195MC (10MC Sweep)	193.25MC 197.75MC	10			
			189MC (10MC Sweep)	187.25MC 191.75MC	9			
			183MC (10MC Sweep)	181.25MC 185.75MC	8			
			177MC (10MC Sweep)	175.25MC 179.75MC	7			
			85MC (10MC Sweep)	83.25MC 87.75MC	6			
			79MC (10MC Sweep)	77.25MC 81.75MC	5			
			69MC (10MC Sweep)	67.25MC 71.75MC	4			
			63MC (10MC Sweep)	61.25MC 65.75MC	3			
			57MC (10MC Sweep)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT

The IF channel must be properly aligned before attempting oscillator alignment. Set the fine tuning control so that the tooth on the bakelite cam points downward.

The sweep generator cable should be terminated with its characteristic impedance, usually 50 ohms.

Complete oscillator alignment may not be necessary. Check all channels and if most of them are off, adjustment A14 may correct the mis-alignment.

This is an overall oscillator alignment and effects all channels. It should not be adjusted for individual channels. The correct setting for this adjustment is approximately 3/8 inches above the chassis, measured to the top of the screw head.

The oscillator channel adjustments are accessible thru a small hole in the front of the tuner as the channel switch is turned to corresponding channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC Sweep)	205.25MC 209.75MC	12	Vert. Amp. to Point (A) Low side to chassis.	A15	Adjust A15 to position markers as shown in Fig 5. Video carrier should be at 50% response. Use maximum marker amplitude to check position of sound carrier.
11.	"	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"	A16	Adjust to position markers as per Fig 5.
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A17	
			195MC (10MC Sweep)	193.25MC 197.75MC	10		A18	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A19	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A20	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A21	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A22	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A23	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A24	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A25	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A26	

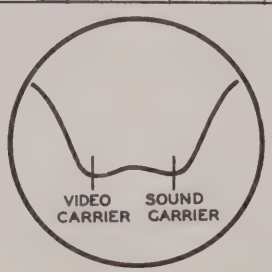


FIG. 4

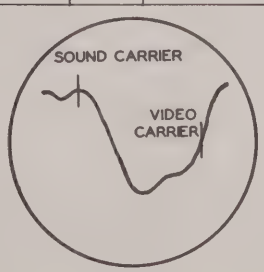


FIG. 5

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	0V	6.3VAC	0V	105VDC	105VDC	0V		
V 2	6J6	85VDC	90VDC	6.3VAC	0V	-1.6VDC	§-.8VDC	0V		
V 3	6AU6	-1.7VDC	0V	6.3VAC	0V	125VDC	125VDC	.5VDC		
V 4	6AU6	-.2VDC	0V	6.3VAC	0V	125VDC	125VDC	.8VDC		
V 5	6AU6	-.2VDC	0V	6.3VAC	0V	125VDC	125VDC	.7VDC		
V 6	6AU6	-.2VDC	0V	6.3VAC	0V	130VDC	127VDC	.7VDC		
V 7	6AL5	0V	-.2VDC	6.3VAC	0V	0V	0V	-.7VDC		
V 8	6AU6	-.7VDC	0V	0V	6.3VAC	80VDC	110VDC	0V		
V 9	12AU7	125VDC	0V	7.9VDC	0V	0V	137VDC	8VDC	75VDC	6.3VAC
V 10	6AU6	-.8VDC	0V	0V	6.3VAC	125VDC	125VDC	0V		
V 11	6T8	-.5VDC	-.8VDC	-.5VDC	0V	6.3VAC	-.5VDC	0V	-.5VDC	40VDC
V 12	35L6GT	225VDC	0V	115VDC	105VDC	0V	0V	6.3VAC	7VDC	
V 13	12AU7	50VDC	-.4VDC	0V	0V	0V	11VDC	-1.2VDC	0V	6.3VAC
V 14	6SN7GT	-.7VDC	55VDC	0V	-25VDC -28VDC	110VDC 190VDC	0V	0V	6.3VAC	
V 15	50L6GT	135VDC	50VAC	135VDC	135VDC	0V	135VDC 220VDC	100VAC	12VDC 20VDC	
V 16	6AL5	1.7VDC	-1.8VDC	6.3VAC	0V	0V	0V	0V		
V 17	6SN7GT	-.2VDC	122VDC	4.4VDC-	-.4VDC	41VDC	4.4VDC	6.3VAC	0V	
V 18	50B5	-6VDC	0V	50VAC	100VAC	135VDC	100VDC 130VDC	-6VDC		
V 19	50B5	-6VDC	0V	0V	50VAC	135VDC	100VDC 130VDC	-6VDC		
V 20	50B5	-6VDC	0V	0V	50VAC	135VDC	100VDC 130VDC	-6VDC		
V 21	6W4GT	0V	90VDC	135VDC	0V	85VDC	100VDC	♦135VDC	♦135VDC	
V 22	35L6GT	0V	100VAC	135VDC	75VDC	-46VDC	-39VDC	65VAC	0V	
V 23	35L6GT	0V	65VAC	135VDC	75VDC	-46VDC	0V	30VAC	0V	
V 24	1B3GT	* DO NOT MEASURE								
V 25	12KP4	6.3VAC	0V	PIN 10 220VDC	PIN 11 75VDC	PIN 12 0V				

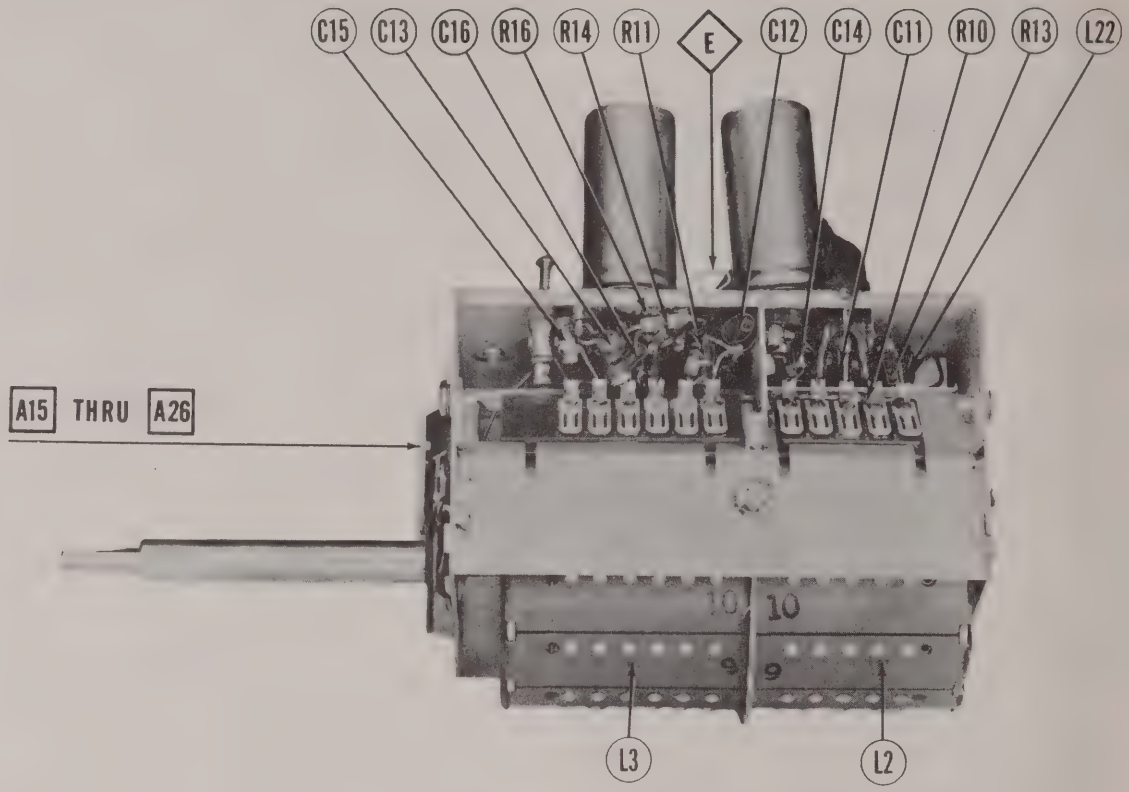
§ Taken with vacuum tube voltmeter
* Do not measure
♦6.3VAC measured across filaments.

RESISTANCE READINGS

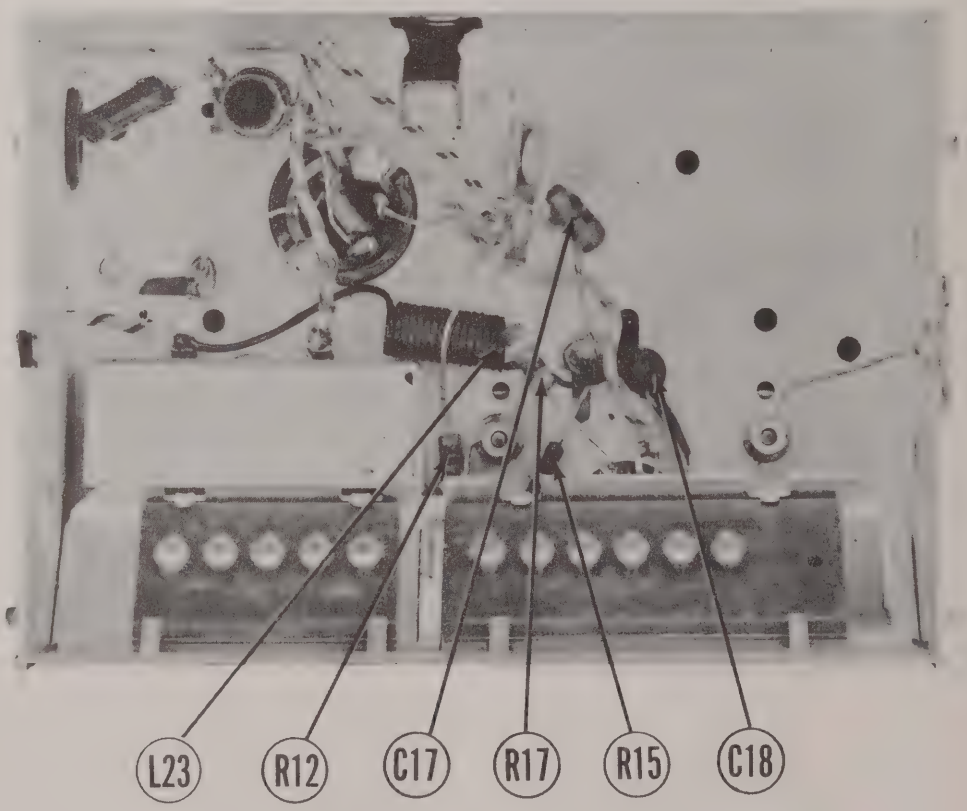
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	80KΩ	0Ω	.1Ω	0Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 2	6J6	†4.7KΩ	†15KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AU6	40KΩ	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	82Ω		
V 4	6AU6	40KΩ	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	82Ω		
V 5	6AU6	35KΩ	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	82Ω		
V 6	6AU6	34KΩ	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	68Ω		
V 7	6AL5	2.5Ω	22KΩ	.1Ω	0Ω	680Ω	0Ω	7KΩ		
V 8	6AU6	1 Meg.	0Ω	0Ω	.1Ω	†9KΩ	†10KΩ	0Ω		
V 9	12AU7	†4KΩ	220KΩ	3.3KΩ	0Ω	0Ω	†11Ω	1 Meg.	12KΩ	.1Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1000Ω	†1000Ω	0Ω		
V 11	6T8	1 Meg.	36KΩ	1 Meg.	0Ω	.1Ω	33KΩ	0Ω	10 Meg.	†470KΩ
V 12	35L6GT	≠0Ω	0Ω	†750Ω	†6KΩ	470KΩ	1 Meg.	.1Ω	180Ω	
V 13	12AU7	†22KΩ	1 Meg.	0Ω	0Ω	0Ω	†120KΩ	470KΩ	0Ω	.1Ω
V 14	6SN7GT	1 Meg.	†18KΩ	0Ω	1.5Meg. 1 Meg.	≠650KΩ ≠120KΩ	0Ω	0Ω	.1Ω	
V 15	50L6GT	†18KΩ	26Ω	†110Ω	†110Ω	1 Meg.	†500KΩ †30KΩ	8.5Ω	2.3KΩ 330Ω	
V 16	6AL5	4.7Meg.	4.7Meg.	.1Ω	0Ω	33KΩ	0Ω	33KΩ		
V 17	6SN7GT	4.7Meg.	†8KΩ	2.2KΩ	100KΩ	†330KΩ	2.2KΩ	.1Ω	0Ω	
V 18	50B5	230KΩ	0Ω	27Ω	6Ω	†45Ω	†2KΩ †120Ω	230KΩ		
V 19	50B5	230KΩ	0Ω	0Ω	27Ω	†45Ω	†2KΩ †120Ω	230KΩ		
V 20	50B5	230KΩ	0Ω	0Ω	27Ω	†45Ω	†2KΩ †120Ω	230KΩ		
V 21	6W4GT	Inf.	†380Ω	†45Ω	Inf.	†680Ω †430Ω	†290Ω	†45Ω	†45Ω	
V 22	35L6GT	Inf.	6Ω	†46Ω	†3KΩ	10KΩ	10KΩ	25Ω	0Ω	
V 23	35L6GT	Inf.	25Ω	†46Ω	†3KΩ	10KΩ	Inf.	.1Ω	0Ω	
V 24	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 10KΩ
V 25	12KP4	.1Ω	1 Meg.	PIN 10 ≠0Ω	PIN 11 12KΩ	PIN 12 0Ω				

† Measured from output of M1 and M2
≠ Measured from output of M3

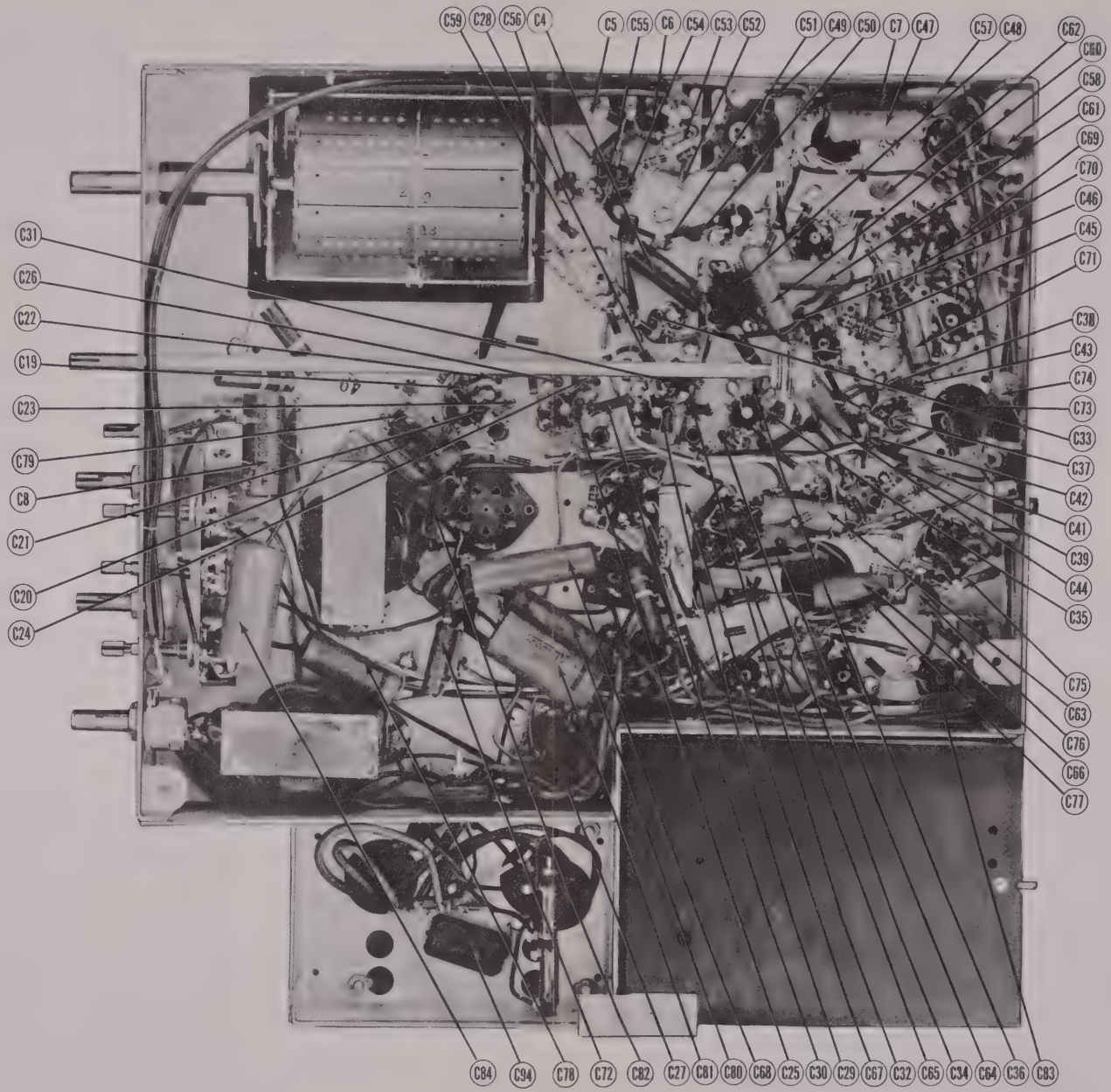
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

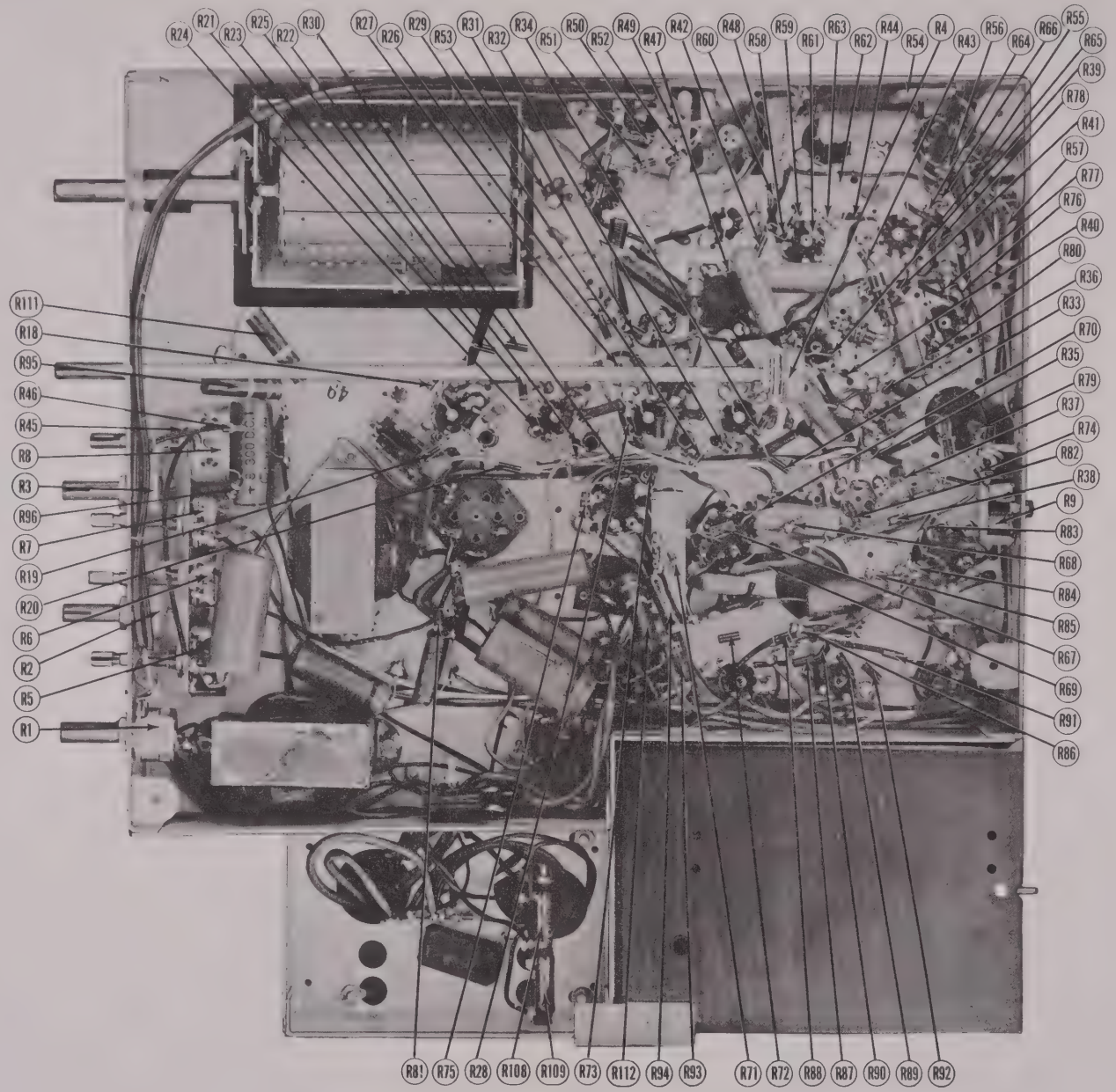
TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		STEW. WARN. PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6AU6	6AU6	7BK	
V6	4th Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Det.-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	DC Rest.-Sync. Phase Inv.	12AU7	12AU7	9A	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.-AF Amp.	6T8	6T8	9E	
V12	Audio Output	35L6GT	35L6GT	7AC	
V13	1st Sync. Amp.-Sync. Clipper	12AU7	12AU7	9A	
V14	2nd Sync. Amp.-Vert. Osc.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	50L6GT	50L6GT	7AC	
V16	Hor. AFC-Hor. Phase Det.	6AL5	6AL5	6BT	
V17	Hor. Multivibrator	6SN7GT	6SN7GT	8BD	
V18	Hor. Output	50B5	50B5	7BZ	
V19	Hor. Output	50B5	50B5	7BZ	
V20	Hor. Output	50B5	50B5	7BZ	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Osc.	35L6GT	35L6GT	7AC	
V23	HV Osc.	35L6GT	35L6GT	7AC	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25A	Picture Tube	12KP4		12D	Model 9100F
B	Picture Tube	12LP4	12LP4	12D	Model 9100H
C	Picture Tube	10BP4	10BP4	12D	Model 9100A, 9100E, 9100G
D	Picture Tube	10FP4		12D	Model 9100B, 9100C, 9100D

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	STEW. WARN. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	200	150	507581	AFH4040D	UP11BJ			▲ Filter
B	200	150			1055			◓ Filter
C2A	40	150	506798	AF844F	UPE42215		EL-224	■ Filter
B	20	150						▲ Hor. MV Plate Dec.
C	20	150						V. Amp. Screen Dec.
C3A	150	25	507359	AF3010A	UP4BJ10		D14904	■ Vert. Output Cath. Byp
B	50	25			57			▲ Output Cath. Bypass
C4	10	25		PRS25/10	BBR10-25		TVA-14	AGC Filter ‡
C5	10	150	505174	PRS150/12	BR1015		UT-12	Dyn. Limiter Cap.
C6	4	150	502547	PRS150/4	BR415		UT-41	Stabilizing Cap.
C7	10	150	505174	PRS150/12	BR1015		UT-12	Decoupling
C8	8	300	507386	PRS350/8	BR835		UT-83	Filter
C9	220		513018			GP2K-220		Ant. Coupling
C10	220		513018			GP2K-220		Ant. Coupling
C11	5		513432			NP0K-5		Fixed Trimmer
C12	120		513439			GP2K-120		RF Decoupling
C13	100		513440			N750L-100		RF Coupling
C14	1000		513009				29C4	RF Fil. Bypass
C15	10		513442			N750K-10		Fixed Trimmer
C16	20		513441			NP0K-20		Osc. Grid Cap.
C17	1000		513009			GP2L-001		RF Bypass
C18	1000		513009				29C4	Mixer. Fil. Bypass
C19	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C20	240	500	512532					Fixed Trimmer
C21	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	1st V. IF Decoupling
C22	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	1st V. IF Fil. Bypass
C23	82		513016	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C24	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C25	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Decoupling
C26	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	2nd V. IF Fil. Bypass
C27	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C28	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C29	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Decoupling
C30	82		513016	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C31	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	3rd V. IF Fil. Bypass
C32	82		513016	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C33	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C34	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	4th V. IF Cath. Bypass
C35	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	4th V. IF Decoupling
C36	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	4th V. IF Fil. Bypass
C37	100		513003	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C38	10			1468-00001	5W5Q1	GP1K-10	MS-41	RF Bypass ‡
C39	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C40	.1	200	512033	P288-1	GT2P1		TM-1	AGC Filter §
C41	5000		513013	1467-005	1D5D5	811-005	29C1	RF Bypass
C42	5		513432	1468-000005	5W5V5	NP0K-5	MS-55	V. Diode Filter
C43	5000		513013	1467-005	1D5D5	811-005	29C1	V. Det.-AGC Fil. Bypass
C44	.05	200	512027	P288-05	GT2S5		TM-15	Video Coupling ♦
C45	.05	200	512027	P288-05	GT2S5		TM-15	Video Coupling
C46	5000		513013	1467-005	1D5D5	811-005	29C1	V. Amp. Screen Dec.
C47	.1	200	512033	P288-1	GT2P1		TM-1	Pic. Tube Grid Filter
C48	47		513433	1468-00005	5W5Q5	GP1K-47	1FM-45	S. IF Coupling
C49	1500		513010	1467-0015	1W5D15	GP2L-0015	1FM-215	S. IF Decoupling
C50	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	S. IF Fil. Bypass
C51	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	IF Coupling
C52	220	500	512527	1468-0002	5W5T2	GP2K-220	1FM-32	Diode Load Cap.
C53	1500		513010	1467-0015	1W5D15	GP2L-0015	1FM-215	De-emphasis
C54	1500		513010	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C55	.002	600	512003	P688-002	GT6D2	GP2M-002	TM-22	Audio Coupling
C56	220		513018	1468-0002	5W5T2	GP2K-220	1FM-32	AF Grid Bypass



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

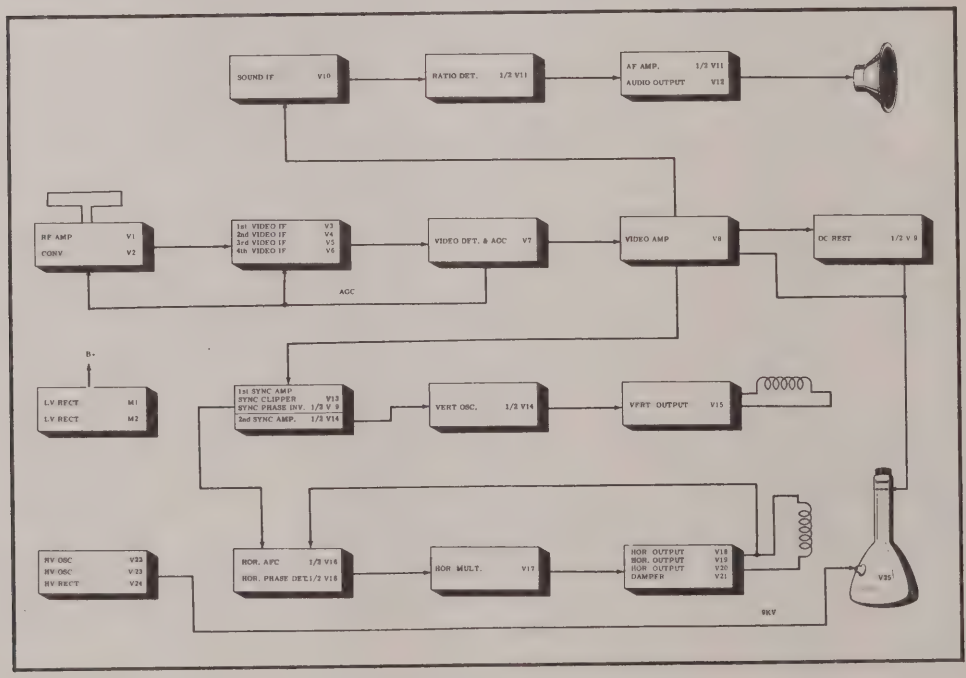
ITEM No.	RATINGS		REPLACEMENT DATA STEW. WARN. PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-110		
SP1A	PM	3.9Ω	507761	MOD.P6-V††	6A15 ††	†† Remount output transformer
B	PM		507111		69A3	
C	PM		506806	ST-107 MOD.P5-V	5A15	
	CONE DIA.	V. C. DIA.				
SP2A	5 3/4"	3/4"				
B	6" x 9"					
C	5"					

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA STEW. WARN. PART No.	SYLVANIA PART NO.		NOTES
M1	.215A	507301	NF-5		
M2	.215A	507301	NF-5		
M3	.001A	507582			

MISCELLANEOUS

ITEM No.	PART NAME	STEWART WARNER PART No.	NOTES
M4	RF Tuner	507585	Complete with Coils and Tubes.
M5	Ion Trap	506803	
	Cabinet Back	507717	Model 9100-A
	Cabinet Back	507752	Models 9100-B, 9100-C and 9100-D
	Cabinet Back	507785	Models 9100-E, 9100-F, and 9100-G
	Cabinet Back	507921	Model 9100-H
	Cabinet	507711	Model 9100-A
	Cabinet	507100	Model 9100-B
	Cabinet	507125	Model 9100-C
	Cabinet	507558	Model 9100-D
	Cabinet	507898	Model 9100-E
	Cabinet	507899	Model 9100-F
	Cabinet	507908	Model 9100-G
	Cabinet	507909	Model 9100-H
	Door	506830	Model 9100A (right hand)
	Door	506831	Model 9100A (left hand)
	Glass Front	507780	Model 9100-E
	Glass Front	507904	Model 9100-F
	Safety Glass	506920	Models 9100-A, 9100-B, 9100-C, and 9100-D, includes escutcheon
	Safety Glass	507910	Model 9100-G
	Safety Glass	507911	Model 9100-H
	Knob	507706	Channel Selector, Model 9100-A, 9100-B, 9100-C and 9100-D
	Knob	507895	Channel Selector, Models 9100-E and 89100-F
	Knob	507916	Channel Selector, Models 9100-G and 9100-H
	Knob	507919	Dummy-Models 9100-G and 9100-H
	Knob	507707	Fine tuning-Models 9100-A, 9100-B, 9100-C and 9100-D
	Knob	507894	Fine tuning-Models 9100-E, and 9100-F
	Knob	507917	Fine tuning-Models 9100-G and 9100-H
	Knob	507708	On-Off-Vol., Hor. Hold, brightness and contrast. Models 9100-A, 9100-B, 9100-C and 9100-D
	Knob	507896	On-Off-Volume, Hor. hold, brightness and contrast. Models 9100-E and 9100-F
	Knob	507918	On-Off-Volume, Hor. hold, brightness and contrast. Models 9100-G and 9100-H
	Mirror	507112	
	Cabinet Lid	507115	Model 9100-B (less hardware)
	Cabinet Lid	507116	Model 9100-C (less hardware)
	Cabinet Lid	507573	Model 9100-D (less hardware)



BLOCK DIAGRAM

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA STEW. WARN. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C57A	.250		•	1468-00025	SMF224	GMCK-250	1FM-325	AF Plate Bypass
B	.5000			1467-005	1DS5S	GMDM-005	1FM-25	Audio Coupling
C58	.02	400	512017	MP482	GMT4S2		TM-12	Output Plate Bypass
C59	.250		513031	1468-00025	SMF224	GMZK-220	1FM-325	Filament Bypass
C60	.05	200	512027	P288-05	GT4S5		TM-15	Sync. Coupling
C61	.05	400	512027	P488-05	GT4S5		TM-15	Sync. Coupling ♦
C62	10000		513032	P488-01	GT4S1	821-01	30C1	Sync. Coupling
C63	.25	400	512027	P488-05	GT4S5		TM-15	Sync. Coupling
C64A	10000		†	P488-01	GT4S1	821-01	TM-11	Vert. Sync. Coupling
B	2000			P588-002	GT6S2	GMDM-002	TM-22	Integrator Net.
C	6000			P588-006	GT6S6	GMDM-006	TM-26	Integrator Net.
D	5000			P588-005	GT6S5	GMDM-005	TM-25	Integrator Net.
C65	4700	800	512033	1467-005	1DS5S	GMDM-005	1FM-25	Vert. Osc. Grid Cap.
C66	.15	400	512036	P488-15	GT4P2		68P36	Vert. Discharge ♦
C67	.25	400	512045	P488-25	GT4P25		TC-2	Vert. Sweep Coupling
C68	.25	200	512045	P488-25	GT4P25		TC-2	Fixed Trimmer
C69	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C70	1000		513009	1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C71	.1	200	512015	P488-02	GT2S2		TM-12	AFC Filter
C72	.02	200	512015	P488-02	GT2S2		TM-12	AFC Feedback
C73	5000		513013	1467-005	1DS5S	811-005	29C1	AFC Filter
C74	.05	400	512027	P488-05	GT4S5		TM-15	AFC Filter
C75	330		513007			GP2K-330		Hor. MV Feedback
C76	220	500	512027			GP2K-220		Hor. Discharge
C77	330		513007			GP2K-330		Hor. Sweep Coupling
C78	.25	200	512045	P488-25	GT2P25		TC-2	Hor. Output Screen Byp.
C79	.1	200	512033	P288-1	GT2P1		TM-1	RF Bypass
C80	.25	200	512045	P488-25	GT2P25		TC-2	Hor. Sweep Coupling
C81	.5	200	512051	P288-5	GT2P5		TC-5	Damper Filter
C82	330	1000	512024					Fixed Trimmer
C83	330	1000	512024					Hor. Output Plate Byp. ♦
C84	.5	200	512051	P288-5	GT2P5		TC-5	Filter
C85	.01	200	512009	P488-01	GT2S1	GP2-335-01	TM-11	HV Osc. Grid Cap.
C86	.1	200	512033	P288-1	GT2P1		TM-1	Bias Filter
C87	.02	200	512015	P488-02	GT2S2		TM-12	Bias Filter
C88	.05	200	512015	P488-02	GT2S2		TM-12	RF Bypass
C89	.05	200	512015	P488-02	GT2S2		TM-12	HV Osc. Decoupling
C90	.02	200	512015	P488-02	GT2S2		TM-12	HV Osc. Screen Bypass
C91	100	500	512054	1464-001	2R5D1		MS-21	Fixed Trimmer
C92	500	10000	513031			410-500		HV Filter
C93	500	10000	513031			410-500		HV Filter
C94	.05	600	512065	P688-05	GT6S5		TM-15	Line Filter

• Items C57A, C57B and R54A and R54B are combined into one unit obtainable under MFGR'S Part No. 506858.
† Items C64A, C64B, C64C, C64D and R69A, R69B, R69C and R69D are combined into one unit obtainable under MFGR'S Part No. 507588.
‡ Not used in uncoded models.
§ Used only in uncoded models.
♦ Used only in series "B" models.
⁋ Some models use .2MFD in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEW.WARN. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	‡	507294	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2A	50KΩ	‡	507299	Q11-123	AM-44-S	Horiz. Hold control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions
R3A	2MΩ	‡	507299	Q11-123	AM-44-S	Brightness control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A per instructions
R4	5MΩ	‡	507583			Contrast control
R5	2000Ω	2	507295	W-2000	43-2000	Width control Wire Wound
R6	500KΩ	‡	507296	Q11-133		Vert. hold control
R7	500KΩ	‡	507296	Q11-133		Height control
R8	10KΩ	4	507297		10-10K	Focus control Wire Wound
R9	2000Ω	2	507304	W-2000 •	43-2000•	Vert. linearity control Wire Wound

• File shaft to duplicate original.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEWART WARNER PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	3900Ω 20%	‡	510147	BTS-3900	Ant. Coil Shunt
R11	10KΩ 20%	‡	510155	BTS-10K	RF Plate Coil Shunt
R12	2200Ω 20%	‡	510143	BTS-2200	RF Decoupling
R13	47KΩ 20%	‡	510167	BTS-47K	AGC Network
R14	4700Ω	‡	510149	BTS-4700	Conv. Grid
R15	220KΩ 20%	‡	510179	BTS-220K	Conv. Grid
R16	10KΩ 20%	‡	510155	BTS-10K	Osc. Grid
R17	4700Ω	‡	510149	BTS-4700	Osc. Plate
R18	680Ω	‡	510151		1st Video IF Grid
R19	47Ω	‡	510117		1st Video IF Cathode
R20	100Ω 20%	‡	510137		1st Video IF Decoupling
R21	1000Ω 20%	‡	510137	BTS-1000	AGC Network
R22	1000Ω 20%	‡	510137	BTS-1000	AGC Network
R23	820Ω	‡	510153		2nd Video IF Grid
R24	47Ω	‡	510117		2nd Video IF Cathode
R25	1000Ω 20%	‡	510137		2nd Video IF Decoupling •
R26	1000Ω 20%	‡	510137	BTS-1000	AGC Network
R27	470Ω	‡	510148		3rd Video IF Grid
R28	82Ω	‡	510117		3rd Video IF Cathode
R29	820Ω	‡	510153		4th Video IF Coil Shunt
R30	1000Ω 20%	‡	510137		3rd Video IF Decoupling
R31	2200Ω	‡	510142	BTS-2200	AGC Network
R32	68Ω	‡	510115		4th Video IF Cathode
R33	1000Ω 20%	‡	510137		4th Video IF Decoupling
R34	820Ω	‡	510153		5th Video IF Transformer Shunt
R35	10KΩ 20%	‡	510155	BTS-10K	AGC Network See Note 1
R36	22KΩ 20%	‡		BTS-22K	AGC Rect. Diode Load See Note 2
R37	680Ω	‡		BTS-680	AGC Cathode See Note 8
R38	120KΩ	‡	510174	BTS-120K	Voltage Divider
R39	270Ω	‡	510126	BW-½-270	Video Det. Diode Load

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA STEW. WARN. PART No.	IRC PART No.	IDENTIFICATION CODES
R40	1 Meg. 20%	‡	510191	BTS-1 Meg.	Video Amp. Grid See Note 9
R41	8200Ω	1	510233	BTA-8200	Video Amp. Plate
R42	10KΩ 20%	‡	510155	BTS-10K	Video Amp. Screen Decoupling
R43	1 Meg. 20%	‡	510191	BTS-1 Meg.	DC Rest. Grid
R44	12KΩ	‡		BTS-12K	DC Rest. Cathode
R45	82KΩ	‡	510171	BTS-82K	Voltage Divider
R46	1 Meg. 20%	‡	510191	BTS-1 Meg.	Picture Tube Grid
R47	470KΩ 20%	‡	510185		Sound IF Grid
R48	1000Ω 20%	‡	510137		Sound IF Decoupling
R49	22KΩ	‡	510160	BTS-22K	De-emphasis
R50	33KΩ	‡	510163	BTS-33K	Ratio Det. Diode Load
R51	18KΩ	‡	510159	BTS-18K	Ratio Det. Diode Load
R52	18KΩ	‡	510159	BTS-18K	Ratio Det. Diode Load
R53	10 Meg. 20%	‡	510197	BTS-10 Meg.	AF Grid
R54A	470KΩ	‡		BTS-470K	AF Plate
B	470KΩ	‡		BTS-470K	Output Grid
R55	180Ω	1	510223	BW-1-180	Output Cathode
R56	5600Ω	‡	510150	BTS-5600	Output Screen Decoupling
R57	560Ω	2	510332	BW-2-560	Filter
R58	22KΩ	‡	510160	BTS-22K	Isolation
R59	1 Meg. 20%	‡	510191	BTS-1 Meg.	Sync. Amp. Grid See Note 3
R60	22KΩ	‡	510160	BTS-22K	Sync. Amp. Grid See Note 4
R61	470KΩ 20%	‡	510185	BTS-470K	Sync. Clipper Grid See Note 5
R62	470KΩ	‡		BTS-470K	Sync. Clipper Grid See Note 6
R63	47KΩ	‡	510166	BTS-47K	Voltage Divider
R64	220KΩ	‡	510178	BTS-220K	Sync. Phase Inv. Grid
R65	3300Ω	‡	510145	BTS-3300	Sync. Phase Inv. Cathode
R66	3900Ω	‡	510147	BTS-3900	Sync. Phase Inv. Plate
R67	1 Meg. 20%	‡	510191	BTS-1 Meg.	Sync. Amp. Grid
R68	18KΩ	‡	510159	BTS-18K	Sync. Amp. Plate
R69A	22KΩ	‡		BTS-22K	Voltage Divider
B	22KΩ	‡	†	BTS-22K	Integrator
C	82000Ω	‡		BTS-82000	Integrator
D	82000Ω	‡		BTS-8200	Integrator
R70	1.1Meg. 5%	‡	510724		Vert. Osc. Grid
R71	100KΩ	‡	510172	BTS-100K	Vert. Osc. Plate
R72	2200Ω 20%	‡	510143	BTS-2200	Vert. Peaking
R73	1 Meg. 20%	‡	510191	BTS-1 Meg.	Vert. Output Grid
R74	330Ω	‡	510128	BW-½-330	Vert. Output Cathode
R75	18KΩ	‡	510159	BTS-18K	Vert. Peaking
R76	100KΩ	‡	510172	BTS-100K	Horiz. Phase Det. Load
R77	100KΩ	‡	510172	BTS-100K	Horiz. Phase Det. Load
R78	4.7Meg. 20%	‡	510195	BTS-4.7 Meg.	Horiz. Phase Det. Load
R79	470KΩ 20%	‡	510185	BTS-470K	Horiz. AFC Filter Network
R80	33KΩ	‡	510163	BTS-33K	Feedback Network
R81	15KΩ	‡	510157	BTS-15K	Feedback Network
R82	2200Ω 20%	‡	510143	BTS-2200	Horiz. MV Plate Decoupling
R83	2200Ω	‡	510142	BTS-2200	Horiz. MV Cathode
R84	100KΩ	‡	510172	BTS-100K	Horiz. MV Grid
R85	330KΩ	‡	510181	BTS-330K	Horiz. MV Plate
R86	220KΩ	‡	510178	BTS-220K	Horiz. Output Grid
R87	100Ω 20%	‡	510119		Parasitic Supp.
R88	100Ω 20%	‡	510119		Parasitic Supp.
R89	100Ω 20%	‡	510119		Parasitic Supp.
R90	100Ω 20%	‡	510119		Parasitic Supp.
R91	100Ω 20%	‡	510119		Parasitic Supp.
R92	100Ω 20%	‡	510119		Parasitic Supp.
R93	47Ω 20%	1	510213	BW-1-47	Damper Filter
R94	220Ω	5	510716	AB-225	Damper Filter Wire Wound
R95	560Ω	2	510332	BT-2-560	Focus Coil Shunt
R96	470KΩ 20%	‡	510185	BTS-470K	Filter
R97	100Ω 20%	‡	510119		Parasitic Supp.
R98	10Ω 20%	‡	510101		Parasitic Supp.
R99	100Ω 20%	‡	510119		Parasitic Supp.
R100	100Ω 20%	‡	510119		Parasitic Supp.
R101	10Ω 20%	‡	510101		Parasitic Supp.
R102	100Ω 20%	‡	510119		Parasitic Supp.
R103	8200Ω	‡	510153	BTS-8200	High Voltage Osc. Grid
R104	1500Ω	‡	510139	BTS-1500	High Voltage Osc. Grid
R105	10KΩ 20%	‡	510137	BTS-10K	Filter
R106	30000Ω 5%	2	510713	BW-2-3300-5%	Filter
R107	470KΩ 20%	‡	510185		HV Filter
R108	10Ω	5	510720		Rect. Ballast Wire Wound
R109	10Ω	5	510720		Rect. Ballast Wire Wound
R110	68Ω	‡	510115	BW-½-68	AGC Cathode See Note 7
R111	6800Ω	2		BT-2-6800	Bleeder See Note 10
R112	180Ω	2		BW-2-180	Damper Filter See Note 10

• Items C57A, C57B R54A and R54B are combined into one unit obtainable under MFGR'S Part No. 506858.
† Items C64A, C64B, C64C, C64D, R69A, R69B, R69C and R69D are combined into one unit obtainable under MFGR'S Part No. 507588.
Note 1. Uncoded chassis use 1 Meg resistor in this application.
Note 2. Uncoded chassis uses 680KΩ resistor in this application.
Note 3. Not used in uncoded chassis.
Note 4. Uncoded chassis use 10KΩ resistor in this application.
Note 5. Uncoded chassis use 1 Meg resistor in this application.
Note 6. Uncoded chassis uses 470KΩ ± 20% resistor in this application.
Note 7. Used only in uncoded chassis.
Note 8. Uncoded chassis uses 180Ω resistor in this application.
Note 9. Used only in series "B" models.
Note 10. Used in model 9100F only.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA STEW. WARN. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.59A	245VCT .43ADC SEC. 4 100VAC @ .45A	6.3VAC @ 5.9A	6.3VAC @ 1.2A	507574			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA STEW. WARN. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	65Ω		503951				Hor. Sync. Coil
T3	175Ω	100Ω	507712	A-8121	A-4000	TB0-1	Vert.Block Osc.Trans.
T4	34Ω Tap		507293				Hor.Output Choke Coil
	9.4Ω						
T5	97Ω	6.3Ω	507312				Vert.Output Trans.
T6A	12Ω		506805	DY-1			Hor.Deflection Coil
B	6Ω						Vert.Deflection Coil
T7	56Ω		506804				Focus Coil

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA STEW. WARN. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T8	2Ω	SEC. 1 452Ω SEC. 2 0Ω	507285				

TRANSFORMER (AUDIO OUTPUT)

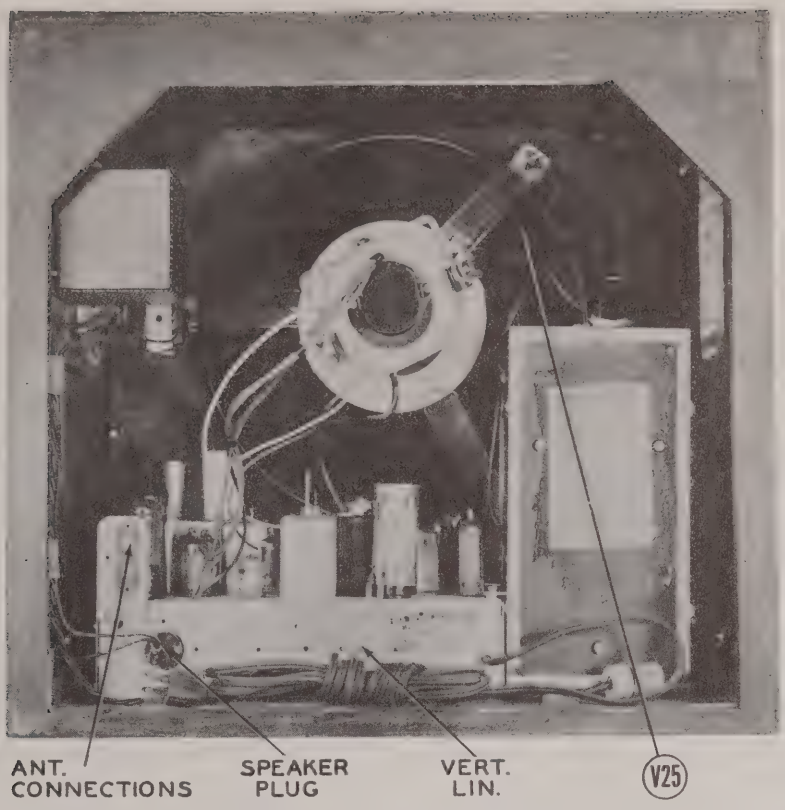
ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STEWART WARNER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T9A	2800Ω	3.9Ω	190Ω	.6Ω	507991 ①	A-3849	A-2902	RO-303	① Output for C-507761 spk.
B					507212 ②				② Output for W-506806 spk.
C					507219 ③				③ Output for W-507111 spk.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 m)	REPLACEMENT DATA STEWART WARNER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.430A	10Ω	.7 Henries	507313				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEW. WARN. PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2A	Ant. Coil	0Ω	0Ω	507952		Channel #2
B	Ant. Coil	0Ω	0Ω	507953		Channel #3
C	Ant. Coil	0Ω	0Ω	507954		Channel #4
D	Ant. Coil	0Ω	0Ω	507955		Channel #5
E	Ant. Coil	0Ω	0Ω	507956		Channel #6
F	Ant. Coil	0Ω	0Ω	507957		Channel #7
G	Ant. Coil	0Ω	0Ω	507958		Channel #8
H	Ant. Coil	0Ω	0Ω	507959		Channel #9
I	Ant. Coil	0Ω	0Ω	507960		Channel #10
J	Ant. Coil	0Ω	0Ω	507961		Channel #11
K	Ant. Coil	0Ω	0Ω	507962		Channel #12
L	Ant. Coil	0Ω	0Ω	507963		Channel #13
L3A	RF-Osc.Coil	0Ω	0Ω	507972		Channel #2
B	RF-Osc.Coil	0Ω	0Ω	507973		Channel #3
C	RF-Osc.Coil	0Ω	0Ω	507974		Channel #4
D	RF-Osc.Coil	0Ω	0Ω	507975		Channel #5
E	RF-Osc.Coil	0Ω	0Ω	507976		Channel #6
F	RF-Osc.Coil	0Ω	0Ω	507977		Channel #7
G	RF-Osc.Coil	0Ω	0Ω	507978		Channel #8
H	RF-Osc.Coil	0Ω	0Ω	507979		Channel #9
I	RF-Osc.Coil	0Ω	0Ω	507980		Channel #10
J	RF-Osc.Coil	0Ω	0Ω	507981		Channel #11
K	RF-Osc.Coil	0Ω	0Ω	507982		Channel #12
L	RF-Osc.Coil	0Ω	0Ω	507983		Channel #13
L4	1st Video IF	.1Ω		507985		Includes 15KΩ resistor (PT #510158). 100MMF and 120 MMF capacitors.
L5	IF Trap	0Ω		507567		
L6	2nd Video IF	.1Ω		507343		
L7	3rd Video IF	.1Ω		507343		
L8	4th Video IF	.1Ω		507343		
L9	RF Choke	2.2Ω		507367		
L10	5th Video IF	.1Ω		503952		Includes 47MMF capacitor (Temp. Comp. PT. #513433) and RF choke (PT. #507367). In series "A" chassis only.
L11	RF Choke	2.2Ω				
L12	Peaking	5Ω		507589		
L13	Sound Take-Off	3Ω	1.6Ω	507384		Includes 15MMF (PT. #513435 ± 5% 500V). 62MMF (PT. #513434 ± 10% 500V).
L14	Peaking	31Ω		507375		Wound on 47KΩ resistor
L15	Peaking	25Ω		507374		
L16	Ratio Det. Trans.	4.8Ω	.2Ω	507321		Includes 110MMF capacitor
L17	RF Choke	15.5Ω		507373		
L18	RF Choke	14Ω		507715		
L19	RF Choke	20Ω		507379		
L20	Fil. Choke	.1Ω		507584		
L21	Fil. Choke	1Ω		507586		
L22	Fil. Choke	0Ω		507970		
L23	Fil. Choke	0Ω		507971		
L24	Fil. Choke	0Ω		507584		
L25	Fil. Choke	1Ω		507586		
L26	Fil. Choke	.2Ω		507378		
L27	Fil. Choke	.2Ω		507378		
L28	Fil. Choke	.5Ω		507587		



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type knobs from controls.
2. Remove 7 screws holding rear cover. Remove cover.
3. Free interconnecting cables from paper clamps.
4. Remove screw holding speaker plug. Remove plug.
5. Disconnect plug connecting rectifier chassis to TV chassis.
6. Remove picture tube base socket.
7. Remove focus coil plug.
8. Remove deflection yolk plug.
9. Remove picture tube high voltage cap.
10. Remove banding strap connecting picture tube mounting to TV chassis.
11. Remove four 9/32" hex bolts holding TV chassis to cabinet. Remove chassis.
12. Remove two 1/4" hex nuts mounting rectifier chassis. Remove chassis.
13. Remove three wing nuts mounting picture tube. Remove tube.
14. Remove four 11/32" hex nuts holding speaker. Remove speaker.

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV station.

Turn the vertical hold control to sync the picture vertically.

Turn the horizontal hold control to the mid position of its range.

Adjust B1 to the mid position of the range over which the picture syncs horizontally.

HIGH VOLTAGE OSCILLATOR ADJUSTMENTS

Make an artificial load for the high voltage power supply by connecting eight 1.1 megohm, 2 watt, resistors in series.

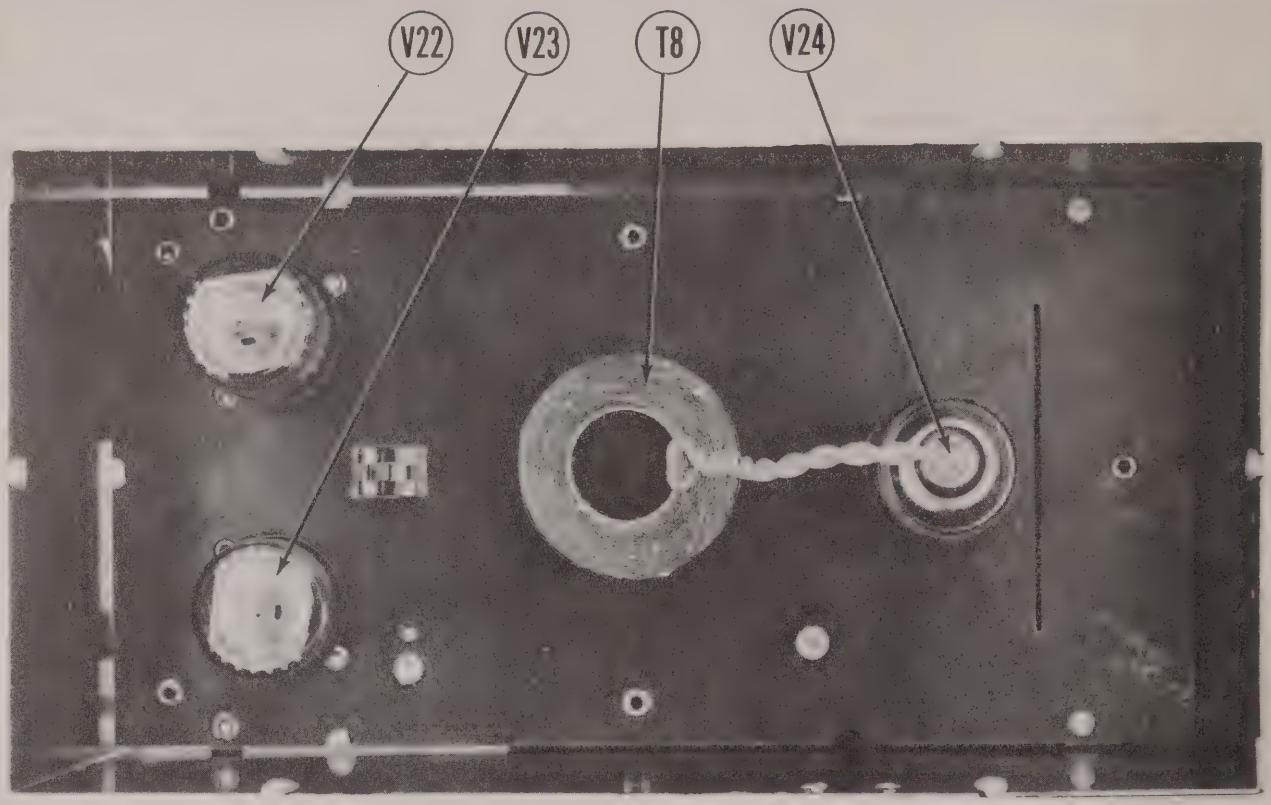
Disconnect the high voltage lead from the picture tube.

Connect one end of the artificial load to the high voltage connector on the end of the high voltage lead.

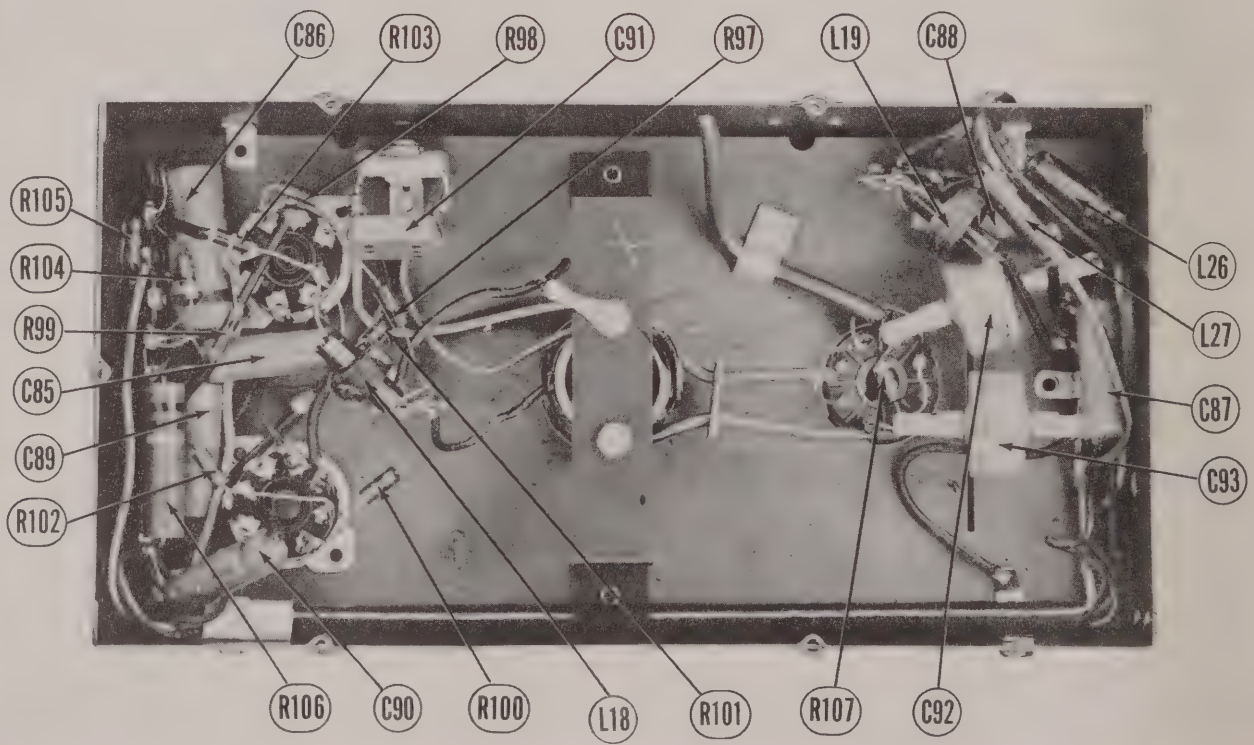
Connect the other end of the artificial load thru a 0-1 ma. meter to the chassis.

Turn the set on and make sure the line voltage is 117 volts.

Adjust B2 for maximum reading on the milliammeter. The reading should be .67ma or greater.

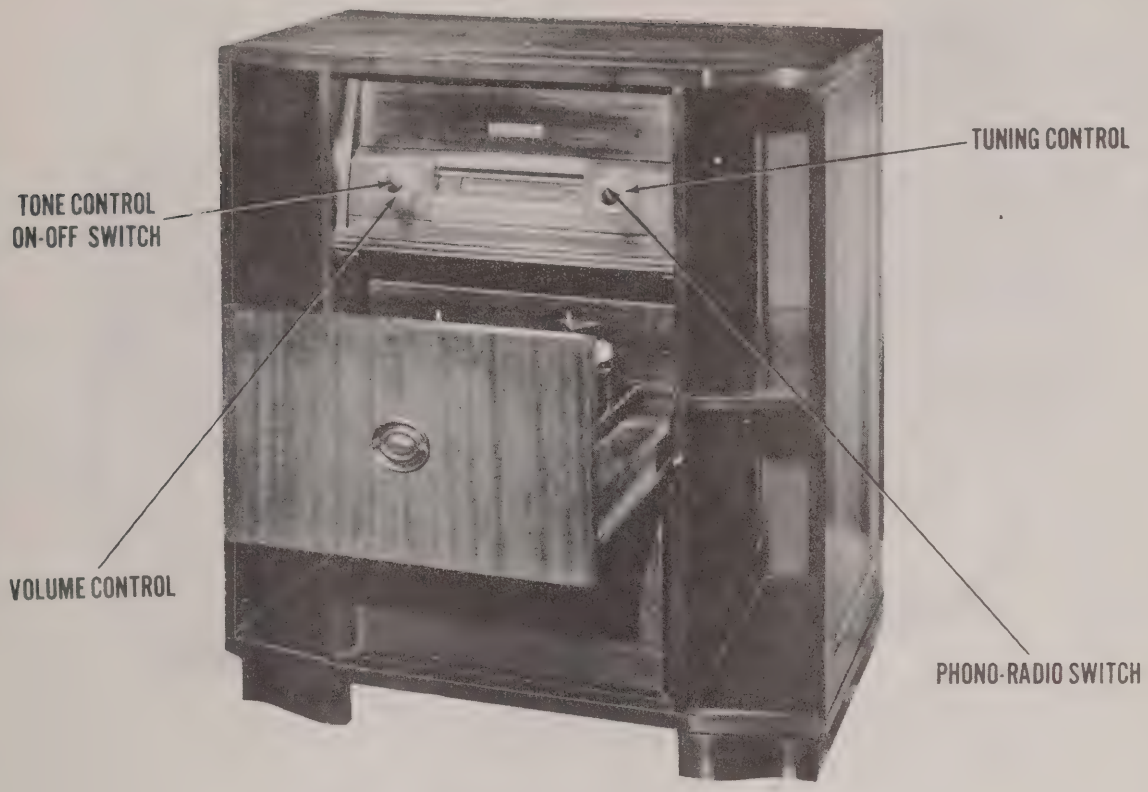


HIGH VOLTAGE POWER SUPPLY - TOP VIEW



HIGH VOLTAGE POWER SUPPLY - BOTTOM VIEW

WESTINGHOUSE MODELS
H-214, H-214A (Ch. V-2103-3)



WESTINGHOUSE MODELS
H-214, H-214A (Ch. V-2103-3)

WESTINGHOUSE MODEL H-214A

TRADE NAME	Westinghouse, Models H-214, H-214A (Ch. V-2103-3)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 6SA7 Converter, 6SF7 IF Amp.-DET-AVC, 6SC7 AF-Phase Inverter, (2) 25L6GT Power Output, 25Z6GT Rectifier.
POWER SUPPLY	105-120 Volts AC RATING .40 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set right hand edge of pointer even with left hand edge of 550 calibration at left end of dial scale.

Use isolation transformer if available. If not connect a .1 MFD. cap. in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMF	High side to Pin 2 (Grid) of 6SF7 (V2). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2	Adjust for maximum output.
2.	200MMF	High side to stator of rear section of tuning gang. Low side to frame of tuning gang.	455KC (400~ Mod.)	"	"	A3, A4	"
3.	200MMF	High side to antenna terminal. Low side to ground terminal.	1615KC (400~ Mod.)	Tuning gang fully open.	"	A5	"
4.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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DATE 11/49 SET #75 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	6SA7	6SA7	8R	
V2	IF Amp.-DET-AVC	6SF7	6SF7	7AZ	
V3	AF Amp.-Phase Inv.	6SC7	6SC7	8S	
V4	Power Output	25L6GT	25L6GT	7AC	
V5	Power Output	25L6GT	25L6GT	7AC	
V6	Rectifier	25Z6GT	25Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	V-3304	PRSA150/50	EDL-5315		TA-530	Filter Green
B	50	150		-30				Filter Red
C2	8	150	V-6321-1	PRS150/8	BR815		UT-81	Decoupling
C3	.1	400	RCP10W4104A	P488-1	GT4P1		TM-1	Tuning Cap Isolation
C4	68	500	RCM20A680M	1468-000075	5W5Q7	GP1K-75	1FM-475	Osc. Grid Cap
C5	.05	400	RCP10W4503A	P488-05	GT4S5		TM-15	AVC Filter
C6	.05	400	RCP10W4503A	P488-05	GT4S5		TM-15	AVC Filter
C7	.05	400	RCP10W4503A	P488-05	GT4S5		TM-15	IF Decoupling
C8	.1	400	RCP10W4104A	P488-1	GT4P1		TM-1	Phono Isolation
C9	220	500	RCM20A221M	1468-00025	5W5T25	GP2K-250	1FM-325	Tone Compensation
C10	.015	400	RCP10W4153A	P488-015	GT6S15			Tone Compensation
C11	.005	600	RCP10W6502A	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C12	300	500	RCM20A301M	1468-0003	5W5T3	GP2K-300	1FM-33	AF Plate Bypass
C13	.01	400	RCP10W4103A	P488-01	GT4S1	GP2-335-01	TM-11	Tone Compensation
C14	.01	400	RCP10W4103A	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C15	.01	400	RCP10W4103A	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C16	.01	400	RCP10W4103A	P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C17	.01	400	RCP10W4103A	P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C18	.1	400	RCP10W4104A	P488-1	GT4P1		TM-1	RF Bypass
C19	.05	400	RCP10W4503A	P488-05	GT4S5		TM-15	Rect. Plate Bypass
C20	.05	400	V-5618-1	P488-05	GT4S5		72P51	Line Isolation

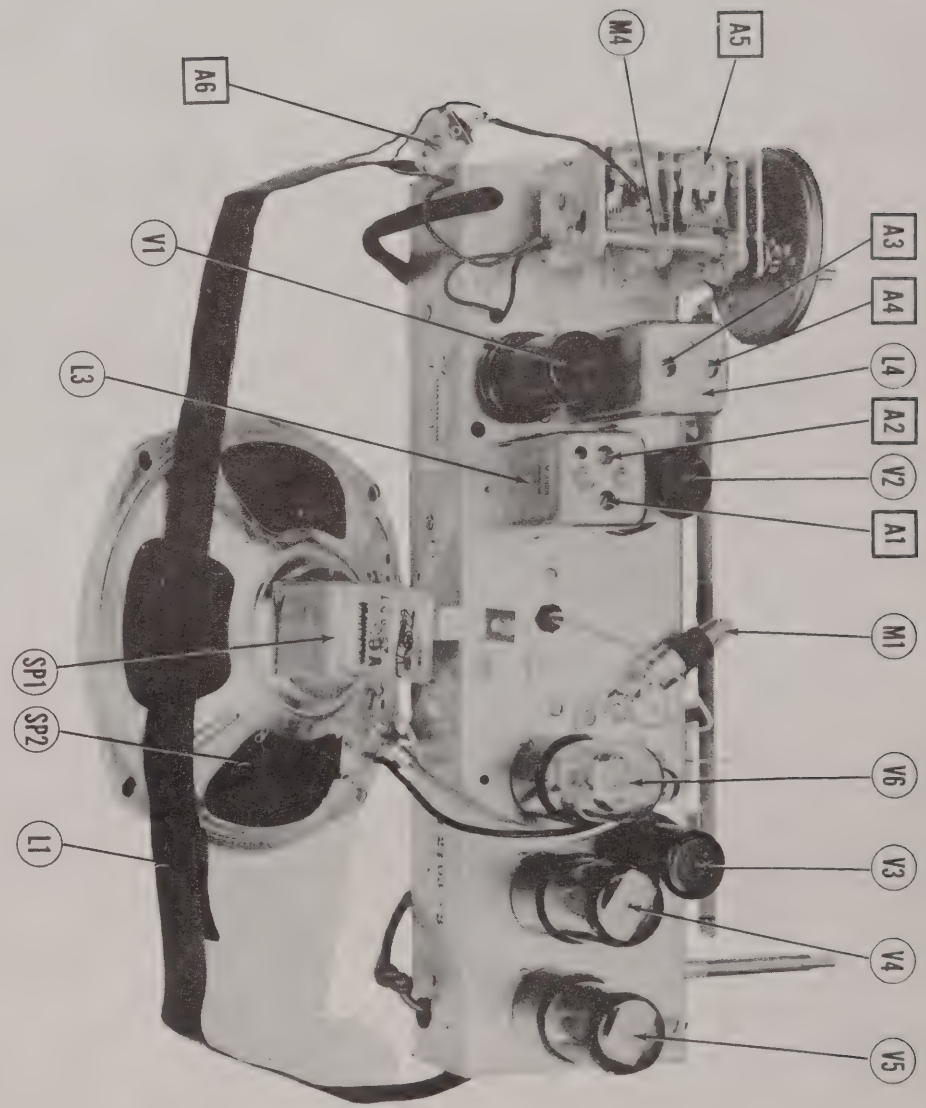
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	V-6443			Volume control, tapped @ 200KΩ — Dual
B	1 Meg.	½				Tone control and switch — Concentric

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	22KΩ	½	RC10AE223M	BTS-22K	Osc. Grid	
R3	22KΩ	½	RC10AE223M	BTS-22K	AVC Network	
R4	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg.	AVC Network	
R5	3300Ω	½	RC10AE332M	BTS-3300	IF Plate Decoupling	
R6	470KΩ	½	RC10AE474M	BTS-470K	Tone Compensation	
R7	33KΩ	½	RC20AE333M	BTS-33K	Tone Compensation	
R8	10 Meg.	½	RC10AE106M	BTS-10 Meg.	AF Grid	
R9	220KΩ	½	RC20AE224K	BTS-220K	AF Plate	
R10	82KΩ	½	RC10AE823K	BTS-82K	Phase Inv. Grid	
R11	180KΩ	½	RC20AE184K	BTS-180K	Phase Inv. Plate	
R12	270KΩ	½	RC10AE274K	BTS-270K	Output Grid	
R13	330KΩ	½	RC10AE334K	BTS-330K	Output Grid	
R14	91Ω	1	RC30AE910J	BW-1-100	Output Cathode	5%
R15	10KΩ	½	RC20AE103M	BTS-10K	Filter	
R16	1500Ω	2	RC40AE152M	BW-2-1500	Filter	
R17	22Ω	½	RC20AE220M	BW-½-22	Pilot Lamp Shunt	
R18A	12Ω	2	V-3311	BW-2-12	Filament Dropping	Wire Wound
B	60Ω	5			Filament Dropping	Wire Wound
R19	220KΩ	½	RC10AE224M	BTS-220K	Isolation	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTINGHOUSE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	5000Ω	3.5Ω	230Ω	.5Ω	V-3297	A-3856	RO-302	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-108		
SP1	PM	3.5Ω	V-6336	MOD.P6-X	6A1	
	CONE DIA.	V.C. DIA.				
SP2	5 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
L1	Loop Ant.	.5Ω	2Ω	V-6338-1		
L2	Osc.Coil		6Ω	V-3382	14-1040	
L3	Input IF	32Ω	32Ω	V-3328	16-6658	
L4	Output IF	23Ω		V-3329	16-6670	

DIAL LIGHTS

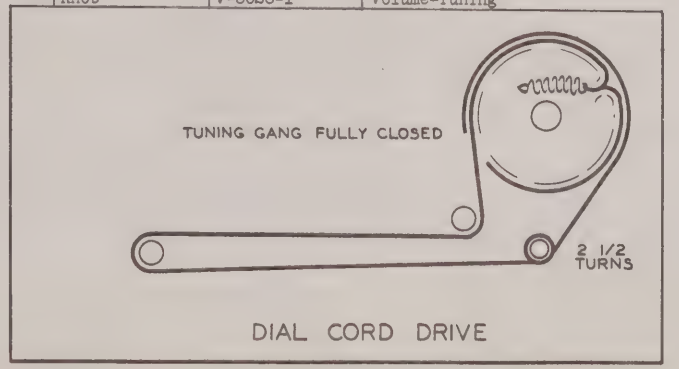
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					WESTINGHOUSE PART No.		
M1	Bayonet	6-8	.15	Brown	47		Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	WESTINGHOUSE PART No.	ASTATIC PART No.	
M2		LT3-M	

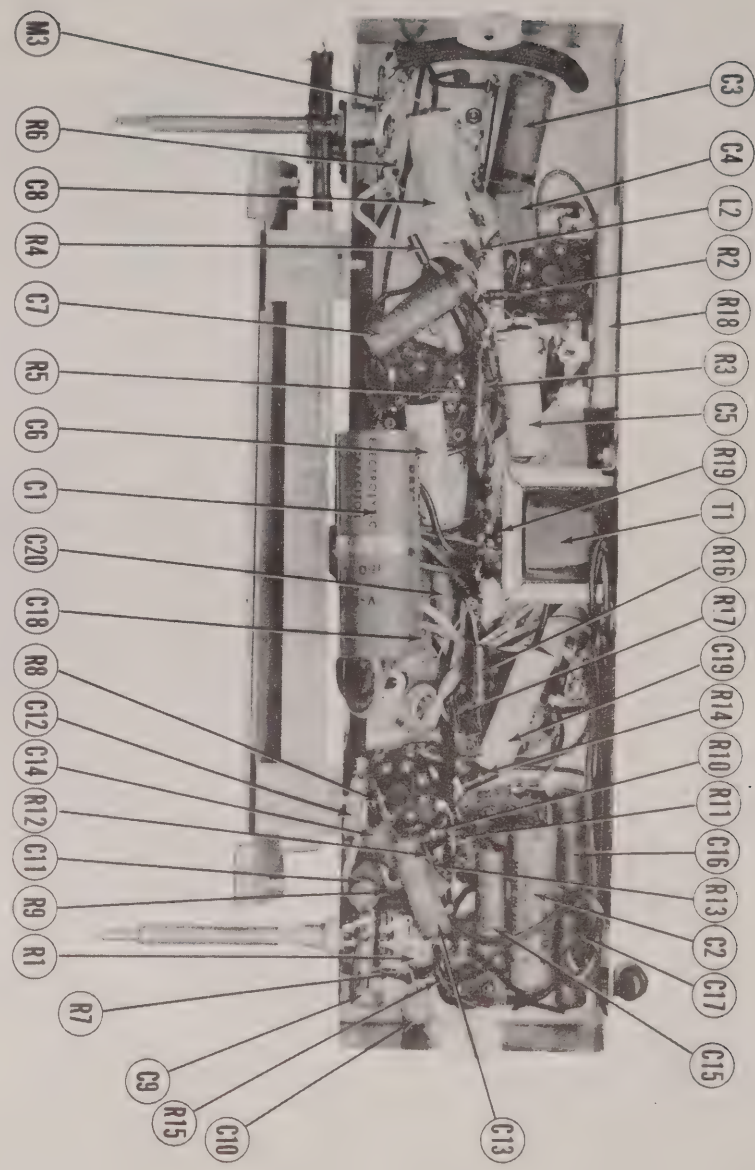
MISCELLANEOUS

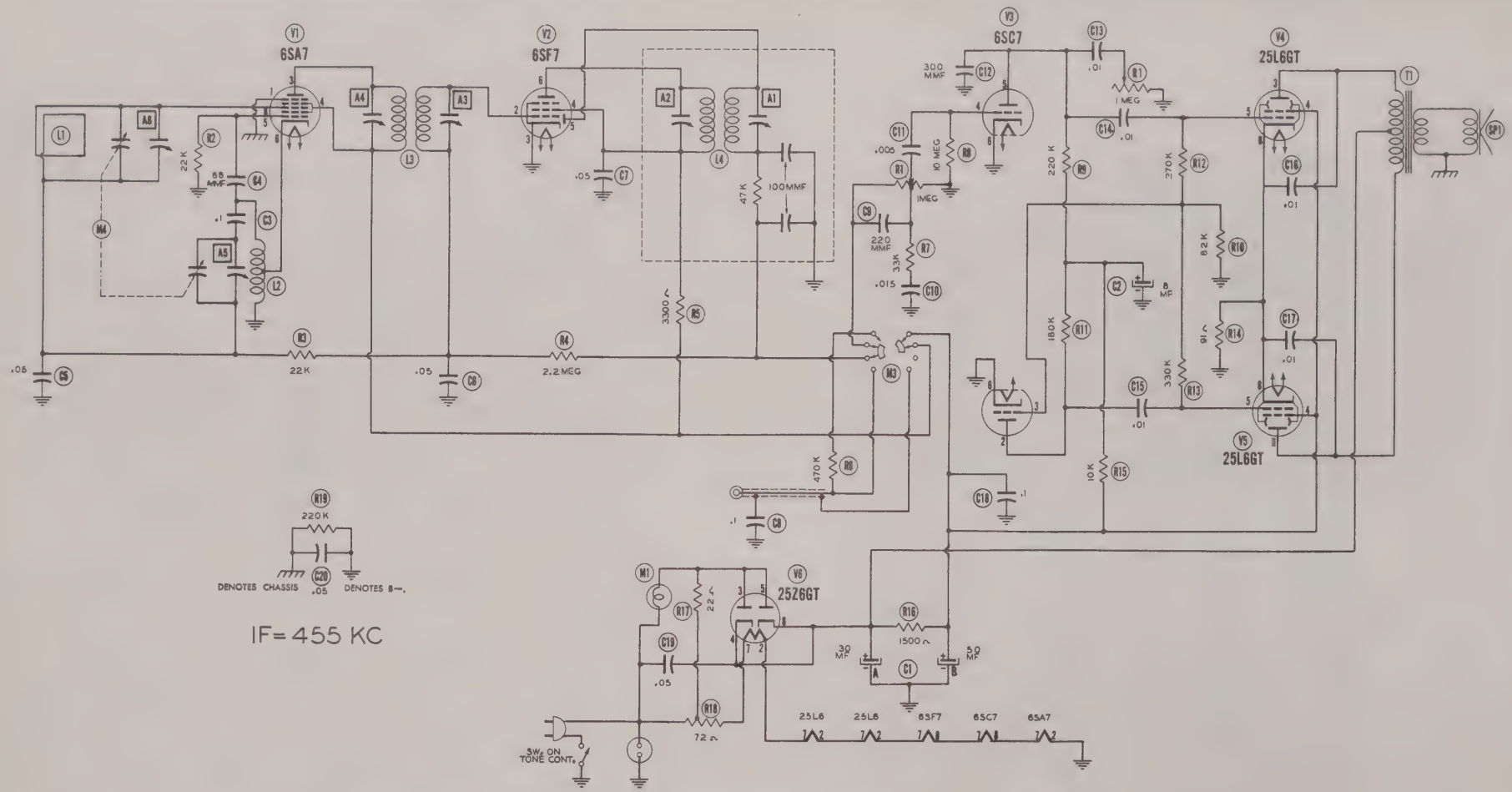
ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M3	Switch	V-6326-1	Phono-Radio
M4	2 Gang Var.Cap.	V-6418	(14-420MMF, 19-130MMF)
	Dial Scale	V-4983	
	Dial Pointer	V-4986	
	Cabinet	V-1173-1	Model H-214
	Cabinet	V-1173-5	Model H-214A
	Knob	V-4362-3	Tone-On/Off
	Knob	V-4362-6	Radio-Phono
	Knob	V-5028-1	Volume-Tuning



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





Radio-Phono Switch In Radio Position.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SA7	0V	0V	85VDC	85VDC	-9.3 VDC	0V	6.3VAC	-.4VDC
V 2	6SF7	0V	-.5VDC	0V	60VDC	-.5VDC	60VDC	20VAC	13VAC
V 3	6SC7	0V	34VDC	-.8VDC	-1.0VDC	50VDC	0V	13VAC	6.3VAC
V 4	25L6GT	0V	46VAC	115VDC	85VDC	0V	0V	70VAC	5.5VDC
V 5	25L6GT	0V	20VAC	115VDC	85VDC	0V	80VDC	46VAC	5.5VDC
V 6	25Z6GT	0V	70VAC	112VAC	120VDC	112VAC	112VAC	95VAC	120VDC

§ Taken With Vacuum Tube Voltmeter.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SA7	220KΩ	0Ω	†1500Ω	†1500Ω	22KΩ	1Ω	5Ω	3 Meg.
V 2	6SF7	220KΩ	3 Meg.	0Ω	†1800Ω	1 Meg.	†1800Ω	15Ω	10Ω
V 3	6SC7	220KΩ	†190KΩ	85KΩ	10 Meg.	†230KΩ	0Ω	10Ω	5Ω
V 4	25L6GT	Inf.	26Ω	†130Ω	†1500Ω	350KΩ	0Ω	38Ω	90Ω
V 5	25L6GT	Inf.	15Ω	†130Ω	†1500Ω	410KΩ	11KΩ	26Ω	90Ω
V 6	25Z6GT	220KΩ	38Ω	102Ω	70KΩ	102Ω	96Ω	50Ω	70KΩ

† Measured From Pins 4 & 8 Of V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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75-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TOP VIEW

ZENITH
MODEL S-14001

ZENITH
MODEL S-14001

GENERAL INFORMATION

This changer is designed to play automatically up to twelve 10-inch or ten 12-inch records at a loading, not intermixed. Adjustment for record size is made by a lever on the top of the record ejector housing. The last record is repeated until the changer is turned off. A three-position slide switch provides the "Off" and the "Manual and Automatic" operations. The change cycle is initiated by a solenoid trip.

LOADING

Set the record selector knob (17) for the size records to be played, and raise the pressure arm (16). Place a stack of records on the spindle so that the records are supported by the record support plate (25) and the record spindle. Lower the pressure arm until it rests on the record stack.

Set the three-position slide switch (19) to the "Auto" position and press "Record Changer" button on the radio control panel. The changer will then play the entire stack of records, repeating the last record until the changer is turned off. To unload, raise the pressure arm to its rest position and lift the records straight up the spindle.

MANUFACTURED BY ZENITH RADIO CORPORATION, CHICAGO, ILLINOIS

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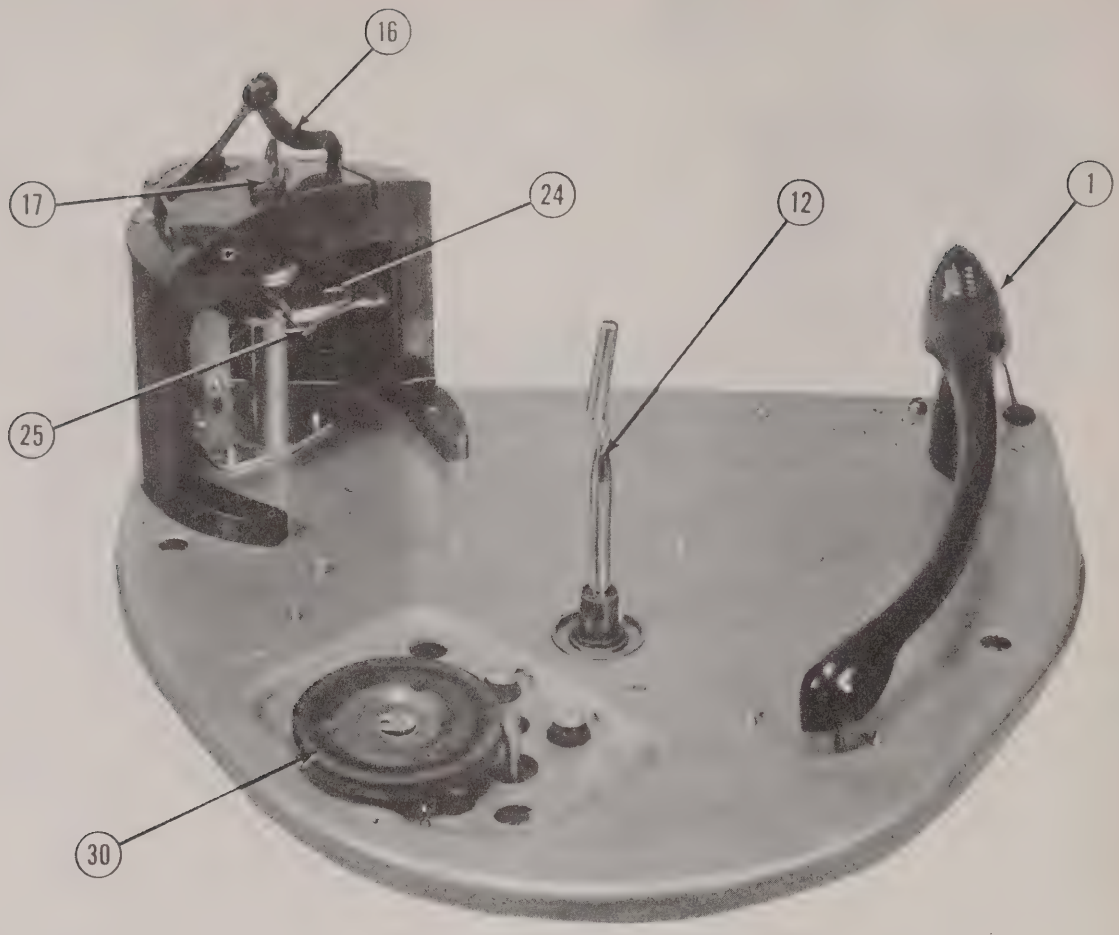
DATE 11/49 SET #75 FOLDER #17



TOP VIEW—LESS TURNTABLE

THE CHANGE CYCLE

The pickup arm pivot shaft and bracket assembly, or the pickup arm control lever (48), is fastened to the swivel bracket (4) by the two set screws (5); therefore, the control lever (48) moves with the pickup arm (1). As the pickup arm moves across the record, the serrated portion of the pickup arm control lever (48) moves toward the pawl (59A) on the trip lever (59). As the serrated portion of the control lever comes in contact with the pawl of the trip lever (59), the oscillating action produced by the eccentric groove on the record causes the pawl to straighten, thus actuating the trip lever (59), which causes the trip switch (52) to close. If the record does not have an eccentric groove, the position trip screw (48A) will close the trip switch and start the next cycle.

Energizing the solenoid starts the change cycle. This is accomplished either as described above or by pushing the "Record Change" button located on the radio control panel. The magnetic flux of the solenoid attracts the clutch release lever (49A) of the clutch release arm assembly (49). This causes the mechanism to trip and move the pawl pusher arm (49B) of the release arm assembly (49) away from the clutch pawl of the clutch pawl assembly (61). This action allows the clutch pawl spring (63) to pull the pawl so as to engage the drive plate segment and to start the clutch sprocket rotating. The clutch sprocket is meshed with the chain drive sprocket (66) and the chain (56) drives the selector (43) and the timing sprocket (46).

The timing sprocket (46) raises the pickup arm lift pin (7) which, in turn, raises the pickup arm from the record. The locating pin of the timing sprocket (46) swings the pickup arm clear of the record by means of the control lever (48). For 10-inch records, the record selector lever (53), which has been brought into position by the selector cam link (40), raises the locating bushing as the timing sprocket revolves. For 12-inch records, the record selector lever (53) is moved aside so that the locating bushing (46A) is not raised; therefore, the locating bushing pin engages the pickup arm control lever. The difference in diameter of the bushing and its pin furnishes the one-inch difference in the set-down position of the pickup arm for 10- and 12-inch records.

The selector sprocket (43), which also moves at this time, drives the record ejector shaft (23) and cam (21), actuating the record ejector plate (24), causing the bottom record of the unplayed stack to drop to the playing position on the turntable.

The locating bushing (or its pin, in the case of 12-inch records) brings the pickup arm into its set-down position. At this point, the clutch trigger assembly (49) is reset by means of a pin on the surface of the timing sprocket.

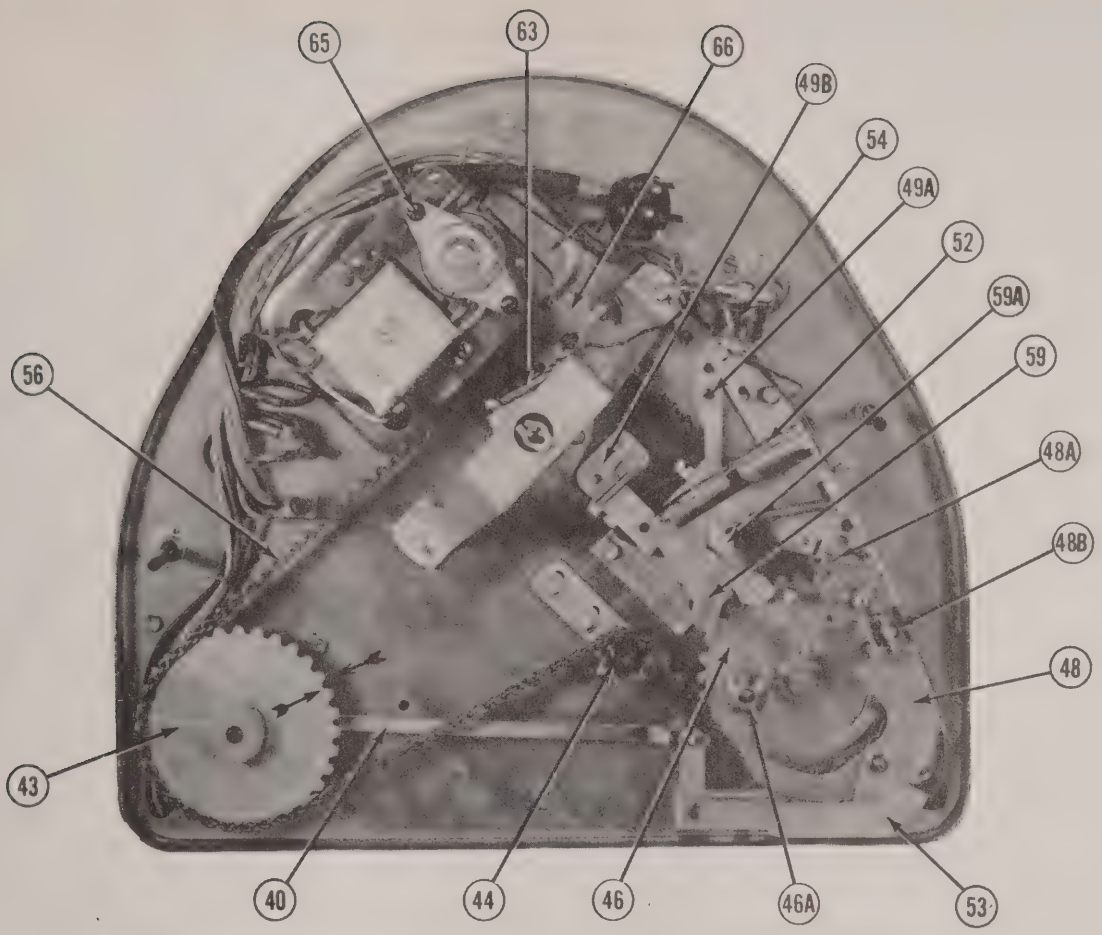
The pickup arm lift pin (7) is then lowered allowing the pickup arm to land on the record. At this point, the clutch pawl of the clutch pawl assembly (61) moves against the pawl pusher arm of the clutch trigger assembly (49), thus disengaging the clutch pawl from the drive plate segment. This completes the change cycle.

The brake lever (38) is actuated by the brake stud on the timing sprocket. The brake prevents coasting and erratic landing of the needle.

ADJUSTMENTS

Set-Down Point

The pickup arm set-down point may be adjusted by means of the set-down adjustment screw (48B) on the con-



BOTTOM VIEW

trol lever (48). Turning this screw clockwise moves the point closer to the record spindle, while counterclockwise rotation moves it out.

Pickup Arm Height Adjustment

An adjustable lift pin (7) is provided to permit proper pickup arm lift. At its maximum rise, the pickup arm should clear the bottom of the unplayed stack by approximately the thickness of a standard record. If the lift is greater, the pickup may strike the upper record, or if the lift is not great enough, the needle will not clear the last record of a full stack.

The lift pin is adjusted by turning the upper lift pin (6) in to shorten the lift, or out to increase the lift.

Cycling Switch Adjustment

The cycling switch of the assembly (52) is in correct adjustment when its contacts are spaced approximately 1/16" apart with the pickup arm in its outward position. To adjust the contact spring tension, insert a screwdriver between the contact and guide springs and bend the contact spring so that an approximate pressure of one ounce is necessary to move the contact spring from the guide spring. Be certain that the contact spring exerts some pressure on the guide spring after adjustment.

The spacing between the trip magnet solenoid (54) and trip lever should be approximately 3/32".

Position Trip Adjustment

A position trip is provided to insure starting of the change cycle in instances where the record does not have an eccentric groove. Adjustment of the position trip adjustment screw (48A) on the control lever (48) changes this trip point. Turning the screw clockwise will cause the mechanism to trip earlier. Backing the screw out will delay the tripping.

Normal adjustment is obtained with the tripping occurring when the needle is 1⅞" from the center of the spindle.

Sprocket Drive Chain Adjustment

The tension of the drive chain (56) may be adjusted by means of the adjustable idler sprocket (44).

Chain Removal and Synchronization

In the event that it is necessary to remove the chain (56), the timing sprocket (46) and the selector sprocket (43) must be synchronized when the chain is replaced. The chain is removed by opening a link and should be replaced with the open side out.

Synchronization is as follows:

(a) The selector sprocket (43) is stamped with an arrow which is to be lined up with a similar arrow on the baseplate.

(b) Reset the clutch trip lever (47A).

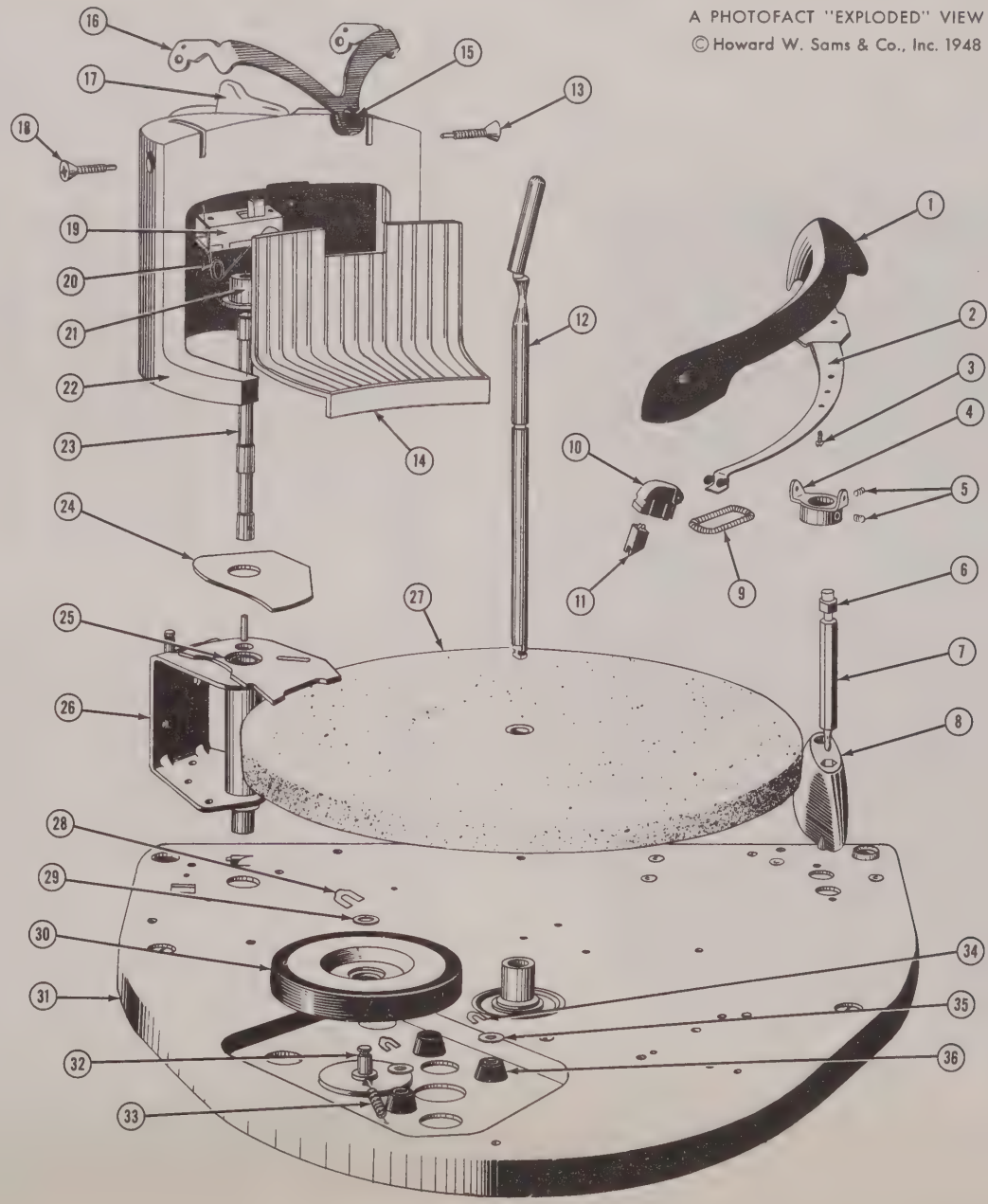
(c) Turn the timing sprocket until the reset stud is approximately 1/16" from the reset lever (49B).

(d) Thread the chain over the timing sprocket (46), chain drive sprocket (66), adjustable idler (44), selector sprocket (43), and set the adjustable idler for medium tension of the chain.

(e) Remove the retaining washer and lift the chain drive sprocket (66) until the gears disengage.

(f) Turn the clutch (61) until the clutch pawl touches the pawl push arm of (49B).

(g) Lower the chain drive sprocket until it engages the clutch gears, and then replace the retaining washer.


A PHOTOFACT "EXPLODED" VIEW
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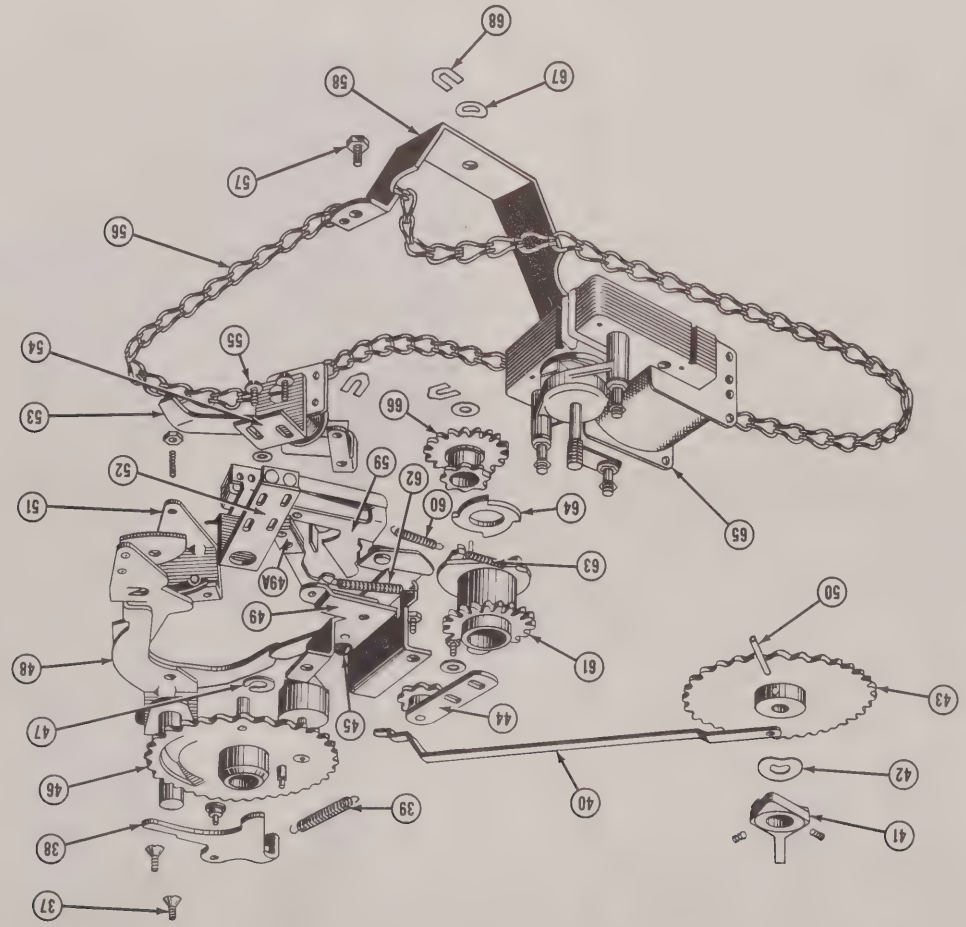
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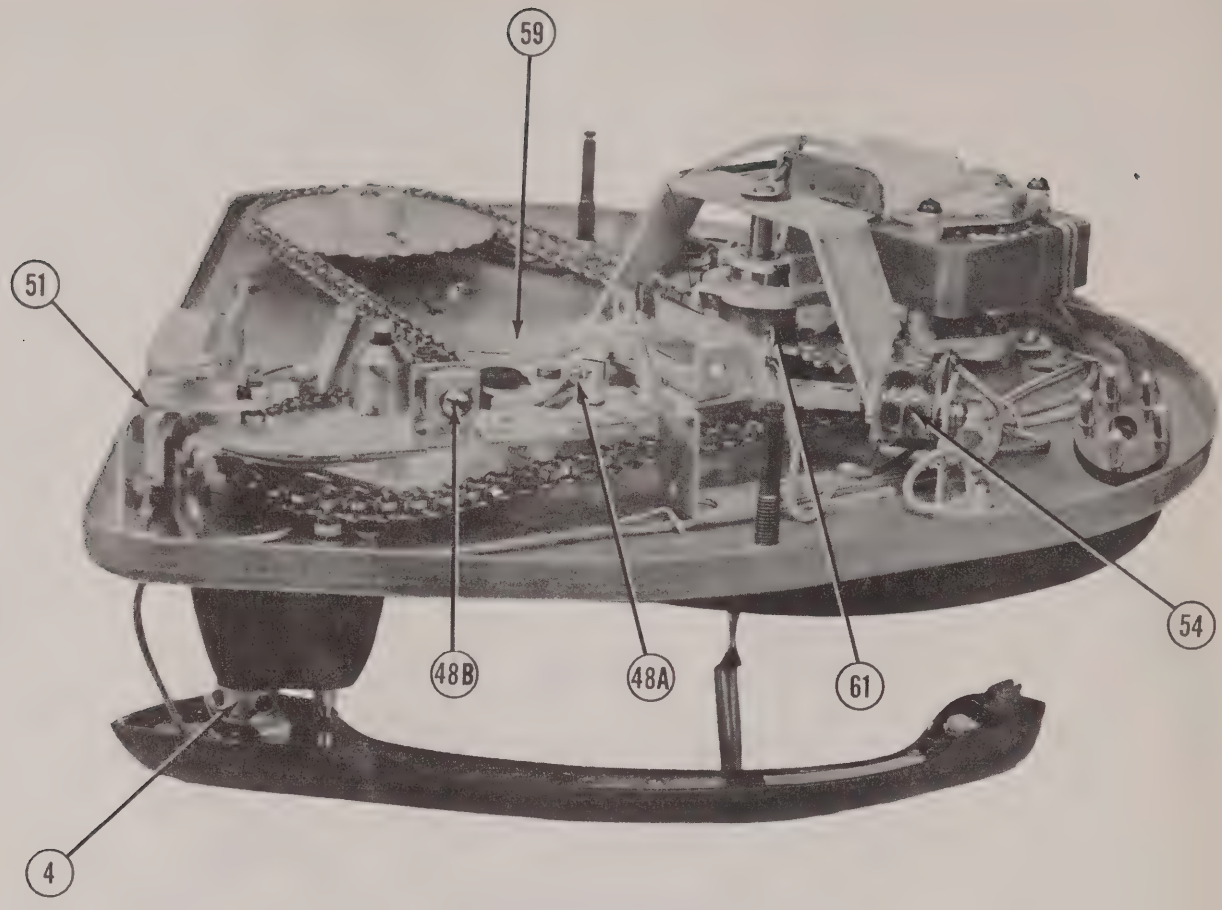


SIDE VIEW—FRONT

TROUBLES

"Record Change" Button on Radio Control Panel Does Not Start Change Cycle:

(a) Check "Record Change" switch.
(b) See that the switch (19) is set to "Auto."
(c) Check electrical continuity of solenoid circuit.
(d) Check solenoid energizing voltage from motor.

Needle Fails to Clear Maximum Load of Records on the Turntable:

(a) Check the pickup arm lift pin (7) adjustment—see "Pickup Arm Height Adjustment."

Pickup Arm Falls Off Record or Set-Down Position Varies:

(a) Check adjustment on "Set-Down Point."
(b) Check pickup arm mounting screws (5) for looseness.
(c) Check plastic pickup arm housing for cracks or breaks.
(d) Check changer to see that it is level.

Changer Cycles with Switch Set at Manual Position

(a) Check the 3-position slide switch (19).

Changer Continues to Cycle:

(a) Check "Record Change" switch (on radio panel).
(b) Check for sticking clutch release mechanism.
(c) Check cycling switch (52) for adjustment.
(d) Check solenoid for short to ground.

Changer Will Not Cycle Upon Completion of Record:

(a) Check the 3-position slide switch (19).
(b) Check the trip switch (52).
(c) Check the solenoid (54) energizing voltage.
(d) Spring (63) missing.

Squeaks When Changer Is in Cycle:

(a) Check lubrication of timing sprocket (46) surfaces.

Squeaks During Playing of Record:

(a) Check friction between record and spindle. A thin coating of wax on the spindle will remedy.

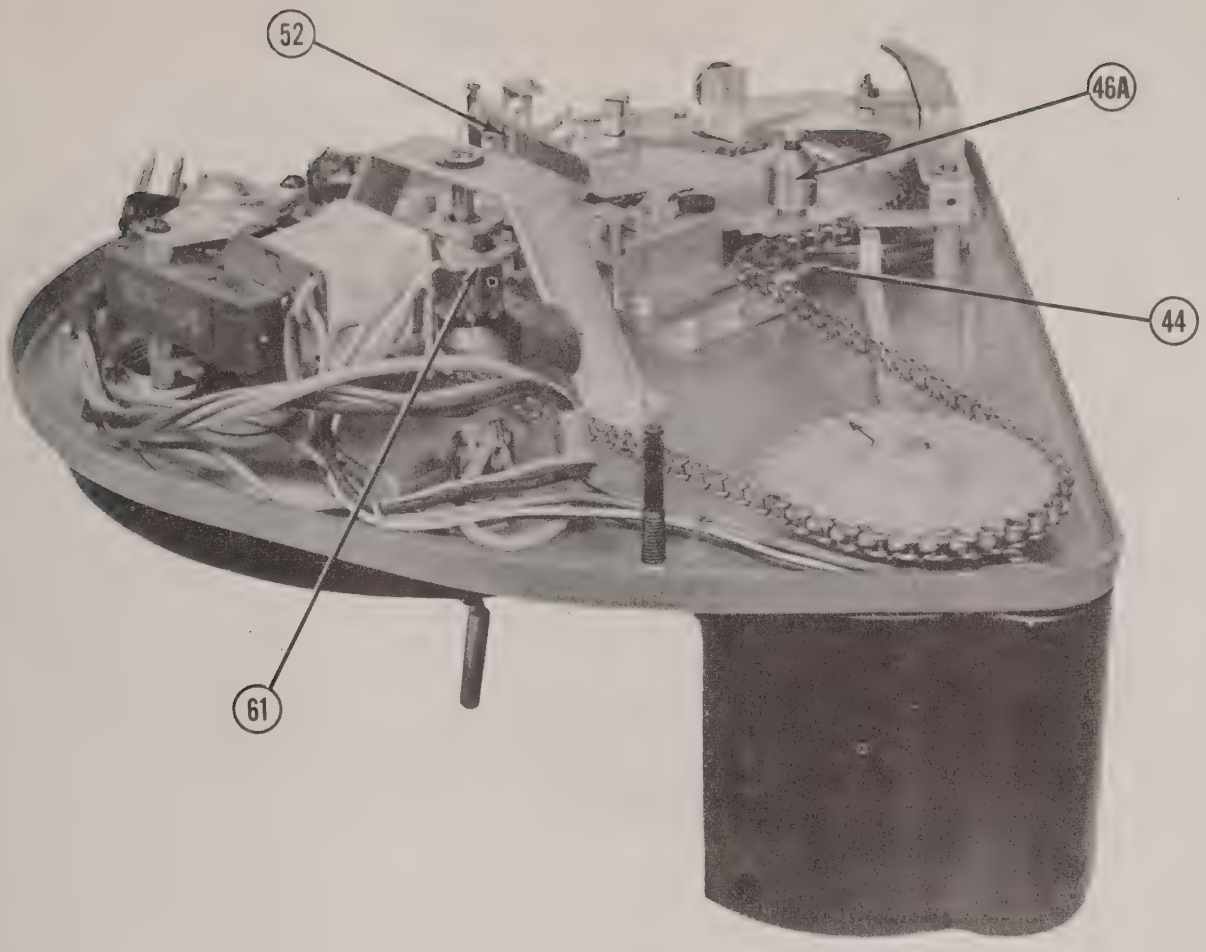
LUBRICATION

Use light machine oil of No. 10 consistency on the following points:

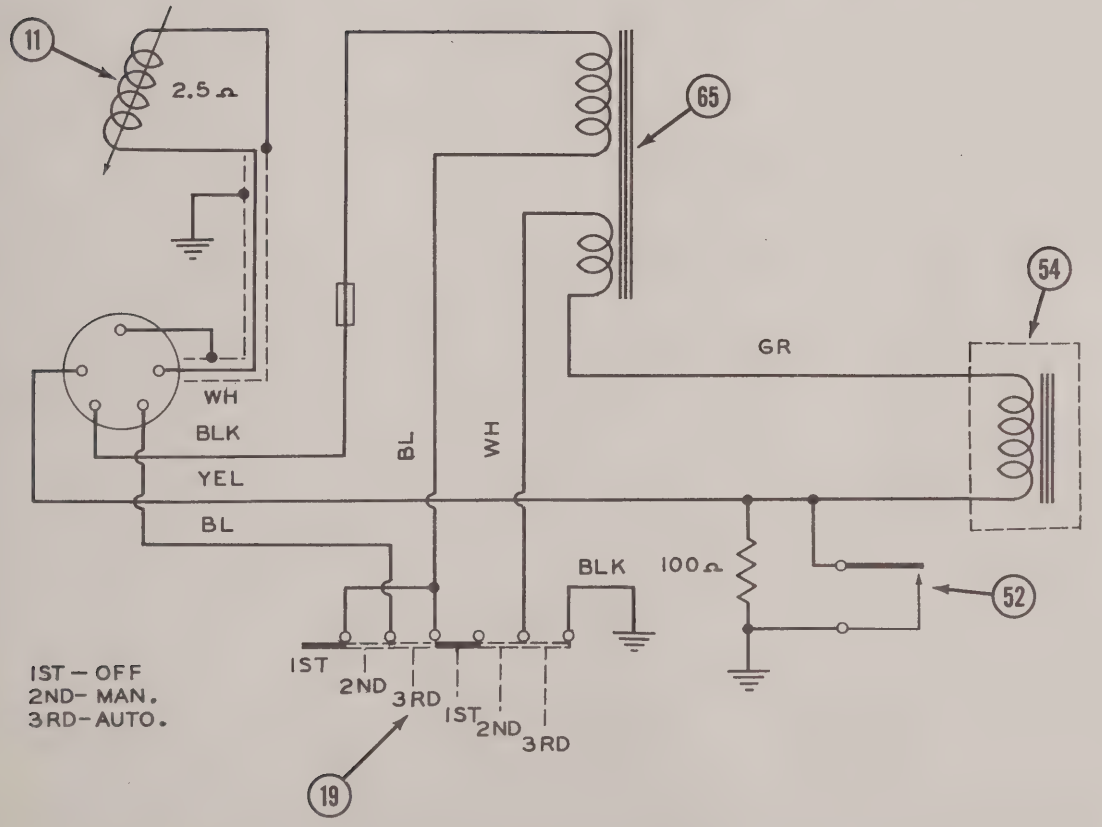
1. Idler wheel (30) bearings.
2. Upper and lower motor (65) bearings (saturate oil wicks).
3. Record spindle guide bearings.
4. Lower drive shaft bearing (61).
5. Drive shaft thrust bearing.

Use Sta-Put grease No. 512 (light grease of the vaseline type) on the following points:

1. Teeth of all sprockets.
2. Lower part of the clutch.
3. The top surface of the timing sprocket (46).
4. Upper surface of the record size lever (53).



SIDE VIEW—LEFT

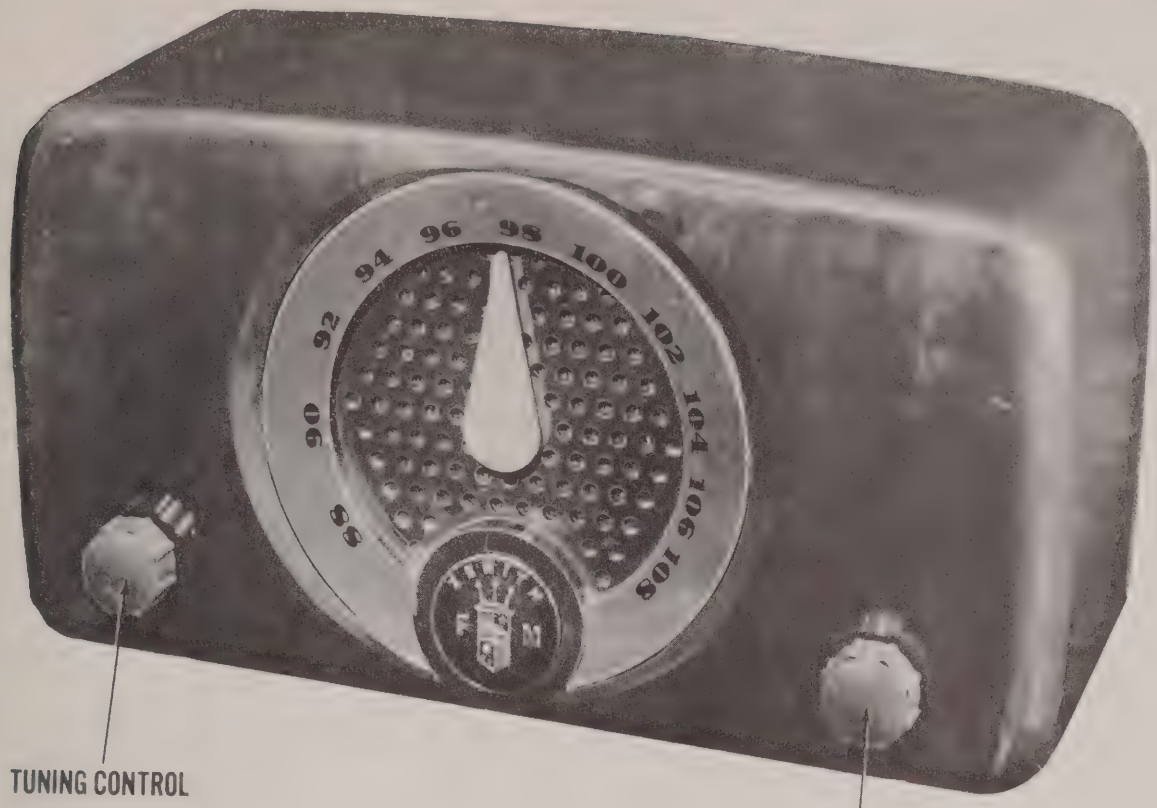


S-14001—SCHEMATIC DIAGRAM

PARTS LIST

Ref. No.	Part No.	DESCRIPTION
1	148-83	Cobra pickup arm housing
2	S-13060	Cobra pickup arm hinge plate (item 2) and swivel bracket (item 4) assembly
3	112-619	Cobra pickup arm housing mounting screws
4		Swivel bracket (part of item 2)
5		Swivel bracket mounting screws
6	56-227	Pickup arm lift pin—upper
	80-584	Pickup arm lift pin—spring
7	56-226	Pickup arm lift pin—lower
8	43-157	Pickup arm support housing
9	80-605	Pickup arm socket tension spring
10	S-12633	Needle cartridge socket and cable assembly
11	S-11473	Cobra needle cartridge
12	S-14140	Record spindle assembly
13	112-687	Pivot screw
14	24-445	Record ejector housing cover
15	125-60	Pressure arm grommet
16	148-87	Record pressure arm
17	46-695	Record selector knob
18	112-687	Pivot screw
19	85-371	3-position slide switch
20	80-448	Pressure arm spring
21	128-20	Record ejector cam
22	43-152	Record ejector housing
23	76-409	Record ejector cam shaft
24	S11105	Record ejector plate and pin assembly
25	S11106	Record support plate—shaft and pin assembly
26	S11107	Record support and ejector bracket assembly
27	S13931	Turntable assembly
28	188-32	Retaining ring
29	93-678	Idler wheel stud fish-paper washer (small)
30	S11118	Idler wheel assembly
31	S13933	Base plate assembly
32	S11657	Idler stud and washer assembly
33	80-368	Idler wheel tension spring
34	188-32	Retaining ring
35	93-903	Steel washer
36	125-61	Rubber grommet
37	112-719	No. 6 x ⅜" flat head screw (self-tapping)
38		Brake lever (part of item 31)
39	80-531	Brake spring
40	118-40	Record selector link
41	128-40	Record selector cam
42		Spring washer
43	S11109	Selector sprocket and bushing assembly
44	S10732	Idler assembly
45	166-41	Rubber bumper
46	S13900	Timing sprocket assembly
46A	94-415	Pickup arm locating bushing
47	93-617	Sprocket shaft retaining washer
48	S13902	Pickup arm pivot shaft and bracket assembly
49	S13903	Clutch release arm assembly
50	56-128	Groove pin—sprocket bushing
51	12-1216	Pickup arm pivot bracket
52	S14581	Trip lever mounting bracket assembly
53	117-133	Record selector lever
54	S13913	Magnet coil assembly
	12-1390	Magnet mounting bracket
55	114-248	No. 6-20 x 5/16" hex head slotted—self-tapping screw
56	214-5	Sprocket drive chain
57	114-201	No. 8-32 x 5/16" hex head slotted—standard-tap—thread-forming screw cadmium plated
58	12-1402	Record spindle support bracket
59	S14582	Trip lever and pawl assembly
60	80-574	Pawl pusher bracket spring (part of item 49)
61	S13894	Clutch pawl assembly
62	80-653	Trip arm spring (part of item 49)
63	80-572	Clutch spring (part of item 61)
64		Drive plate (part of item 61)
65	141-108	AC motor, 60 cycles
66	S13895	Drive sprocket and bushing assembly
67	93-901	Spring washer shakeproof
68	188-27	Record spindle retaining washer

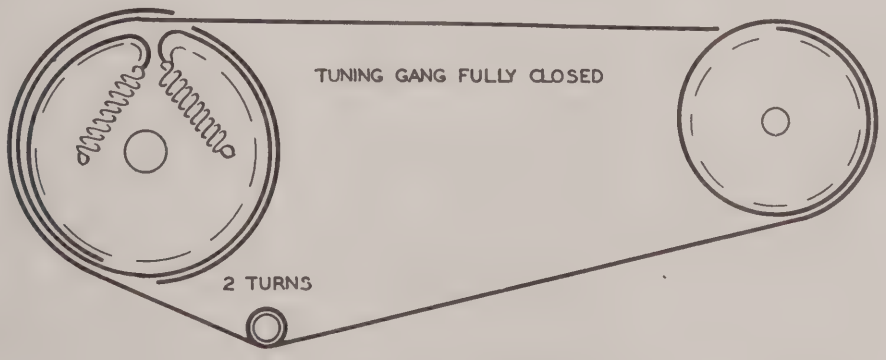
ZENITH MODEL
7H918 (Ch. 7F03)



ZENITH MODEL
7H918 (Ch. 7F03)

ZENITH MODEL 7H918

TRADE NAME	Zenith, Model 7H918 (Ch. 7F03)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC-DC Operated FM Superheterodyne Receiver
TUBES(SEVEN)	Types 12BA6 RF Amp., 12AT7 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 12AU6 Limiter, 19T8 Discriminator-AF Amp., 35B5 Power Output
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE-FREQ. MOD. 88-108MC	RATING: .33 Amp. @ 117 Volts AC



DIAL CORD DRIVE

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	12BA6	12BA6	7BK	
V2	Converter	12AT7	12AT7	9A	
V3	1st IF Amp.	12BA6	12BA6	7BK	
V4	2nd IF Amp.	12BA6	12BA6	7BK	
V5	Limiter	12AU6	12AU6	7BK	
V6	Disc.-AF Amp.	19T8	19T8	9E	
V7	Power Output	35B5	35B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	80	150	22-1757	AF888D*	UP8415		EL-340*	■ Filter
B	40	150						▲ Filter
C2	10000		22-3	P488-01	GT4S1	821-01	TM-11	Ext. Ground Isolation
C3	7.5		22-1852	1468-00001	5W5Q1	GP1K-10	MS-41	Ant. Coupling
C4	100		22-1669	1468-0001	5W5T1	GP1K-100	1FM-31	RF Cath. Bypass
C5	10000		22-3	P488-01	GT4S1	821-01	TM-11	Decoupling
C6	25		22-2060	1469-000025	5R5Q25	NP0L-25	MS-425	Fixed Trimmer
C7	10000		22-3	P488-01	GT4S1	821-01	TM-11	Osc. Plate Dec.
C8	22		22-1506			GP1K-22		Fixed Trimmer
C9	.68		22-1766					Osc. Coupling
C10	50		22-1367	1468-00005	5W5Q5	GP1K-50	1FM-45	Osc. Grid Cap.
C11	1000		22-1676	1468-001	1W5D1	GP2L-001	1FM-21	Conv. Cath. Bypass
C12	10000		22-3	P488-01	GT4S1	821-01	TM-11	Conv. Plate Decoupling
C13	10000		22-3	P488-01	GT4S1	821-01	TM-11	1st IF Cath. Bypass
C14	.002	600	22-1220	P688-002	GT6D2	GP2M-002	TM-22	1st IF Decoupling
C15	10000		22-3	P488-01	GT4S1	821-01	TM-11	2nd IF Cath. Bypass
C16	.005	600	22-229	P688-005	GT6D5	GP2M-005	TM-25	2nd IF Decoupling
C17	10000		22-3	P488-01	GT4S1	821-01	TM-11	Limiter Decoupling
C18	10000		22-3	P488-01	GT4S1	821-01	TM-11	Audio Coupling
C19	500		22-1700	1468-0005	5W5T5	GP2K-500	1FM-35	AF Plate Bypass
C20	10000		22-3	P488-01	GT4S1	821-01	TM-11	Audio Coupling
C21	.05	200	22-1158	P288-05	GT2S5		TM-15	Feedback
C22	.02	400	22-1379	P488-02	GT4S2		TM-12	Output Plate Bypass
C23	100		22-1669	1468-0001	5W5T1	GP1K-100	1FM-31	Line Ant. Coupling
C24	10000		22-3	P488-01	GT4S1	821-01	TM-11	Filament Bypass
C25	10000		22-3	P488-01	GT4S1	821-01	TM-11	Filament Bypass
C26	10000		22-3	P488-01	GT4S1	821-01	TM-11	Filament Bypass

* Parallel sections to obtain desired capacity.

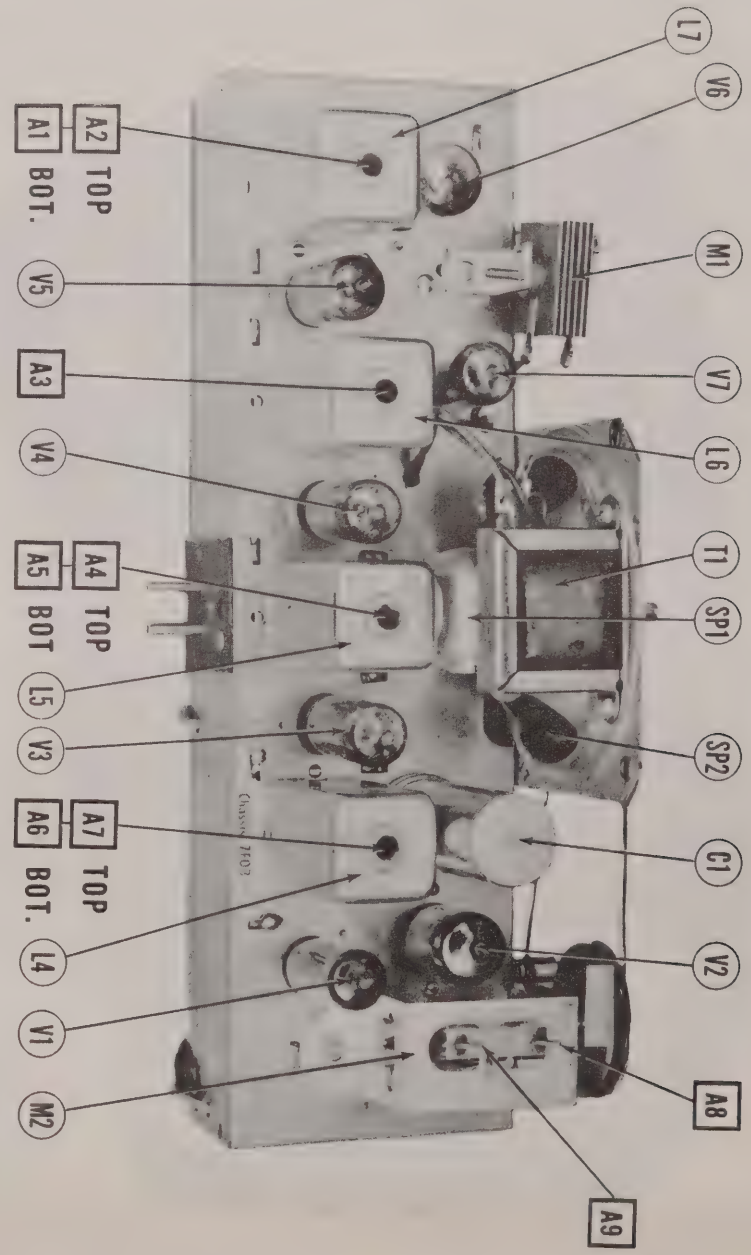
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	63-2035	Q13-137	AM-61-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
R2	68Ω	½	63-1737	BW-½-68	RF Cathode
R3	220Ω	½	63-1758	BW-½-220	Conv. Cathode
R4	220Ω	½	63-1758	BW-½-220	Conv. Plate Decoupling
R5	10KΩ	½	63-1828	BTS-10K	Osc. Grid
R6	220Ω	½	63-1758	BW-½-220	Osc. Plate Decoupling
R7	220Ω	½	63-1758	BW-½-220	Decoupling Network
R8	100Ω	½	63-1744	BW-½-100	1st IF Cathode
R9	220Ω	½	63-1758	BW-½-220	1st IF Decoupling
R10	100Ω	½	63-1744	BW-½-100	2nd IF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	
R11	220Ω	½	63-1758	BW-½-220	2nd IF Decoupling
R12	100KΩ	½	63-1870	BTS-100K	Limiter Grid
R13	15KΩ	½	63-1835	BTS-15K	Limiter Decoupling
R14	150KΩ	½	63-1876	BTS-150K	Disc. Diode Load
R15	150KΩ	½	63-1876	BTS-150K	Disc. Diode Load
R16	10KΩ	½	63-1828	BTS-10K	De-emphasis
R17	820Ω	½	63-1782	BTS-820	Tone Compensation
R18	4.7 Meg.	½	63-1940	BTS-4.7 Meg.	AF Grid
R19	470KΩ	½	63-1898	BTS-470K	AF Plate
R20	470KΩ	½	63-1898	BTS-470K	Output Grid
R21	150Ω	½	63-686	BW-½-150	Output Cathode (Wire Wound)
R22	1000Ω	½	63-1786	BTS-1000	Feedback
R23	1000Ω	3	63-1527	AB-1000	Filter (Wire Wound)
R24	22Ω	1	63-1450		Surge Limiter (Wire Wound)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3.4KΩ	3.5Ω	260Ω	.5Ω	206-666	A-3876	A-2928	RO-2	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.5Ω	49-666		4A07 †	† Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
L1	Ant. Choke		0Ω	S-15690		
L2	RF Coil		0Ω	S-15743		
L3	Osc. Coil		0Ω	S-15691		
L4	1st IF	.4Ω	.4Ω	95-1150		
L5	2nd IF	.4Ω	.4Ω	95-1150		
L6	3rd IF	.2Ω		95-1152		
L7	Disc. Transformer	.3Ω	.3Ω	95-1153		

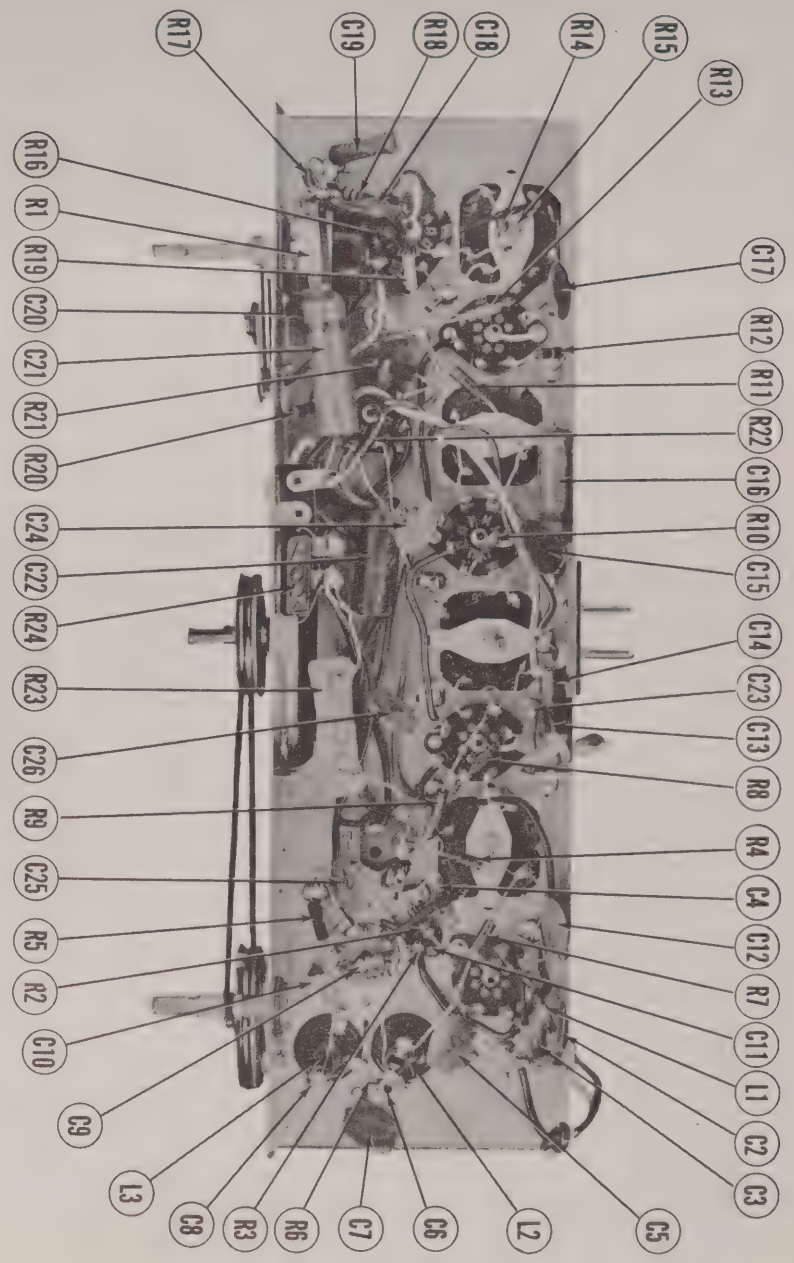
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	ZENITH PART No.	SYLVANIA PART NO.		
M1	.100A	212-7	ND-5		

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuning Assby.		
	Dial Scale	26-423	
	Dial Pointer	59-226	
	Cabinet	14-1118	

CHASSIS—BOTTOM VIEW



ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 12AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	Point of non-interference	DC Probe to Point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	.05MFD	"	"	"	DC Probe to Point (B) Common to chassis.	A2	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	.05MFD	High side to pin 1 (Grid) of 12BA6 (V4). Low side to chassis.	"	"	DC Probe to Point (C) Common to chassis.	A3	Adjust for maximum deflection.
4.	.05MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to chassis.	"	"	"	A4,A5	"
5.	.05MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	A6,A7	"

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 12BA6 (V4). Low side to chassis.	10.7MC (450KC Sweep)	Point of non-interference	Vert.Amp. to Point (C) Low side to chassis.	A3	Adjust for maximum amplitude and symmetry as per Fig 1.
2.	.05MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to chassis.	"	"	"	A4,A5	"
3.	.05MFD	High side to pin 7 (Grid) of 12AT7 (V2). Low side to chassis.	"	"	"	A6,A7	"
4.	.05MFD	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A1,A2	Adjust A2 so 10.7MC marker occurs at center of cross-over lines as per Fig 2. Adjust A1 for maximum amplitude and straightness of crossover lines. Continue with step 6.

RF AND OSCILLATOR ALIGNMENT

Before beginning step 6 remove the line cord antenna lead from antenna terminal. Replace chassis in cabinet and turn dial to 98MC., remove chassis carefully so not to disturb this setting and proceed with step 6. To loosen slugs apply a hot iron to the cement.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω carbon res.	High side thru 270Ω resistor to antenna terminal. Low side to chassis. (See note above).	98MC (Unmod.)	98MC (See note above)	DC Probe to Point (C) Common to chassis.	A8	Adjust for maximum deflection.
7.	"	"	"	"	"	A9	"

FIG. 1

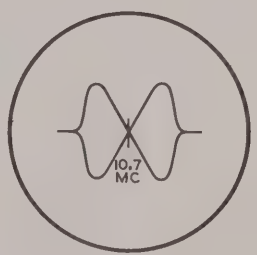
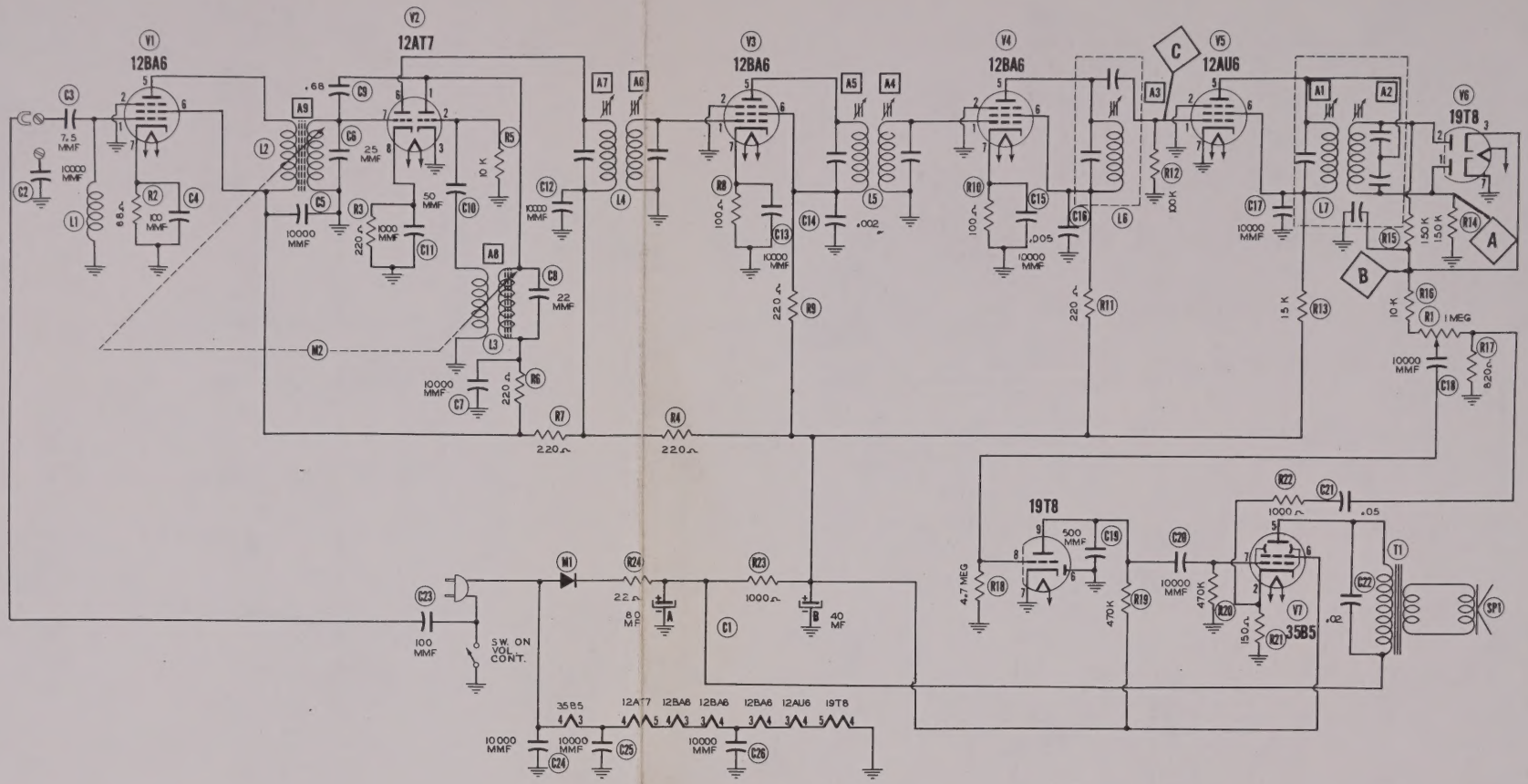


FIG. 2



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	0V	0V	55VAC	70VAC	85VDC	85VDC	.7VDC		
V 2	12AT7	80VDC	§-2VDC	0V	82VAC	70VAC	90VDC	0V	2.5VDC	75VAC
V 3	12BA6	0V	0V	55VAC	45VAC	90VDC	90VDC	1.4VDC		
V 4	12BA6	0V	0V	45VAC	34VAC	90VDC	90VDC	1.4VDC		
V 5	12AU6	-.5VDC	0V	34VAC	19VAC	45VDC	45VDC	0V		
V 6	19T8	-.9VDC	-5.2VDC	.2VDC	0V	19VAC	0V	0V	-1VDC	40VDC
V 7	35B5	0V	5.5VDC	62VAC	117VAC	130VDC	92VDC	0V		

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	0Ω	0Ω	52Ω	62Ω	†1500Ω	†1500Ω	68Ω		
V 2	12AT7	†1700Ω	10KΩ	0Ω	75Ω	62Ω	†1200Ω	0Ω	2200Ω	58Ω
V 3	12BA6	0Ω	0Ω	52Ω	40Ω	†1200Ω	†1200Ω	100Ω		
V 4	12BA6	0Ω	0Ω	40Ω	25Ω	†1200Ω	†1200Ω	100Ω		
V 5	12AU6	100KΩ	0Ω	25Ω	18Ω	†15KΩ	†15KΩ	0Ω		
V 6	19T8	150KΩ	150KΩ	200KΩ	0Ω	18Ω	0Ω	0Ω	4.7Meg.	†470KΩ
V 7	35B5	470KΩ	150Ω	75Ω	112Ω	†240Ω	†1000Ω	470KΩ		

† Measured from junction of M1 and R24

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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